Indian Semiconductor Market, 2011

Presentation of Key Findings

4th May, 2011

Flow of Presentation

- Executive Summary
- Indian Semiconductor Market Forecast
- Indian Electronics Market Forecast
- Application Segments and Forecasts
- Conclusions and Future Directions

Executive Summary

- India's semiconductor market grew by a phenomenal **28.3%** in 2010; Global semiconductor market's cyclical trends has **minimal impact** on India
- Mobile Devices, Telecommunication and IT/ OA contributed **82%** to Semiconductor TM in 2010
- Local manufacturing of **telecom equipment** by OEMs and EMS companies to propel related semiconductor consumption by a massive **50%** during 2010 to 2012
- Influenced by regulatory norms and sharpening competition, automotive segment to account for the **highest growth** in semiconductor demand at **31%** from 2010 to 2012
- Sustained gulf between semiconductor TM and TAM from 2010-2012 highlight the **urgency to promote local manufacturing** to drive higher growth in TAM

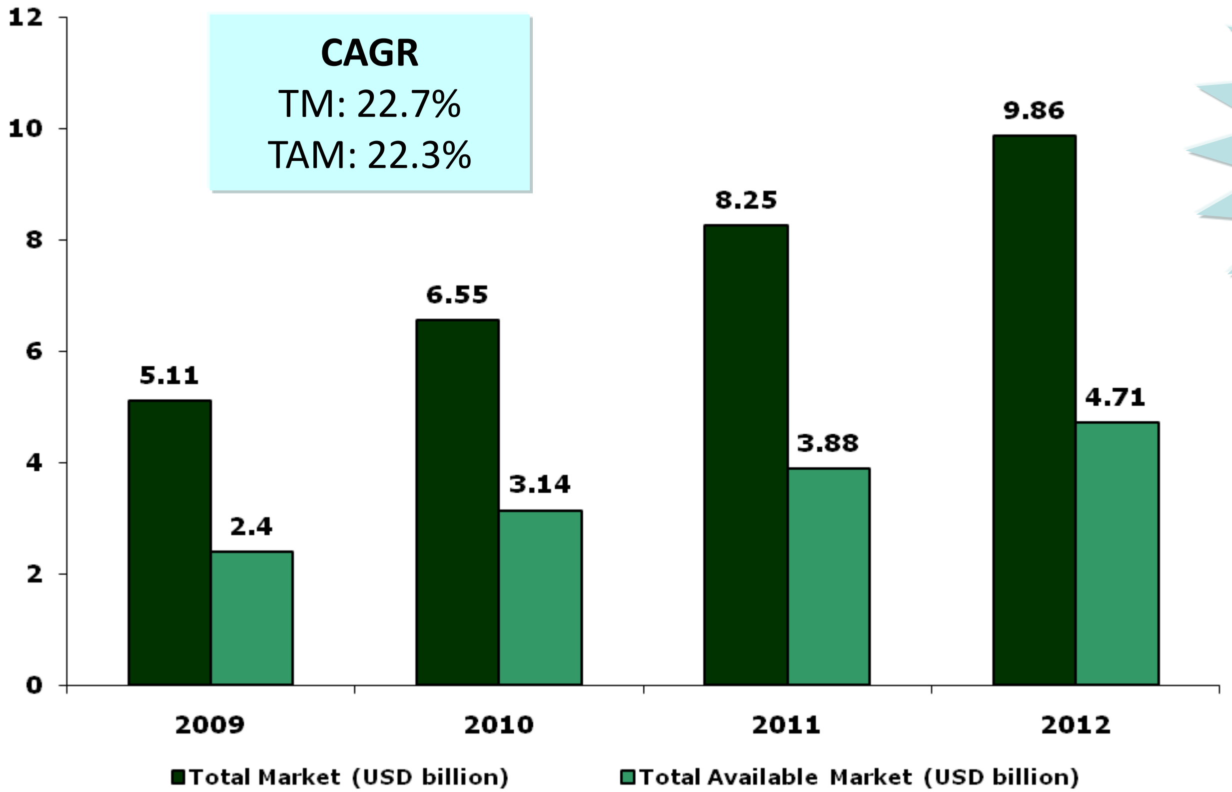
The Total Semiconductor Market (TM) revenues poised to grow from **$6.55 billion in 2010** to **$9.86 billion in 2012**. The market is expected to witness a CAGR of 22.7%

During the corresponding period, the Total Semiconductor Available Market (TAM) revenues are expected to grow at a CAGR of 22.3% reaching revenues of **$4.71 billion in 2012** from **$3.14 billion in 2010**

Mobile Devices and Telecom are the key contributors to TAM while Mobile Devices and IT/ OA are the key contributors to TM

Being an indispensable component in a wide range of products, memory market leads the contribution to semiconductor revenues with 23.4% and 20.1% of TM and TAM respectively

Indian Semiconductor Market

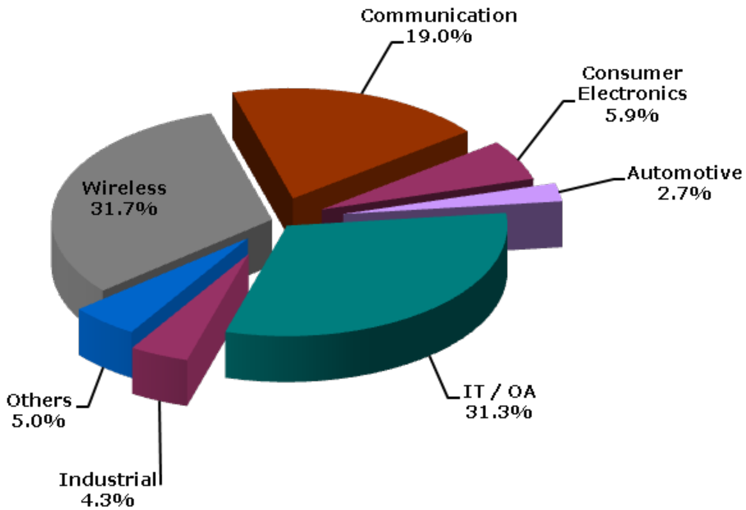


India market contribution to Global Semiconductor market to increase from **2.2% in 2009** to **2.7% by 2012**

Base Year: 2010, Source: ISA-Frost & Sullivan

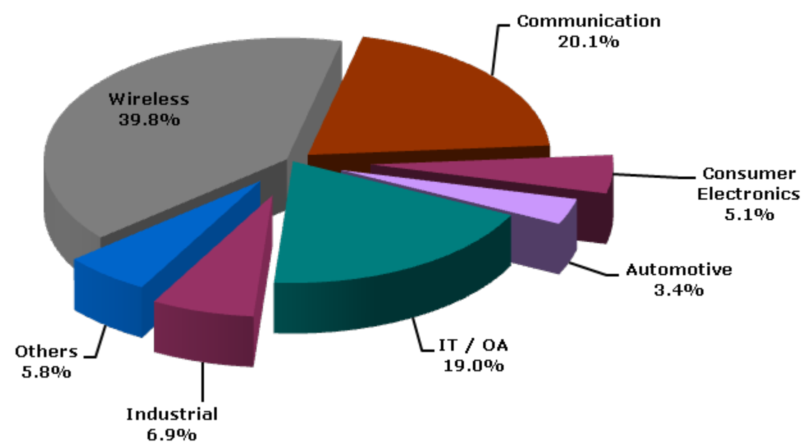
Semiconductor Market Revenue Contributors

2010 TM Revenues: $6,550.25 million



- Incredible demand for **3G and smart phones** position Mobile devices as the chief contributor toTM.
- Rapid growth in **emerging Tablets market**, ever **evolving Flash Cards demand** and continuing penetration of Notebooks retain **prominence of ITOA segment to TM revenues**.
- Riding on the growth in the Indian automotive industry, automotive sector's contribution to **TM revenues to witness maximum growth of 31%.**

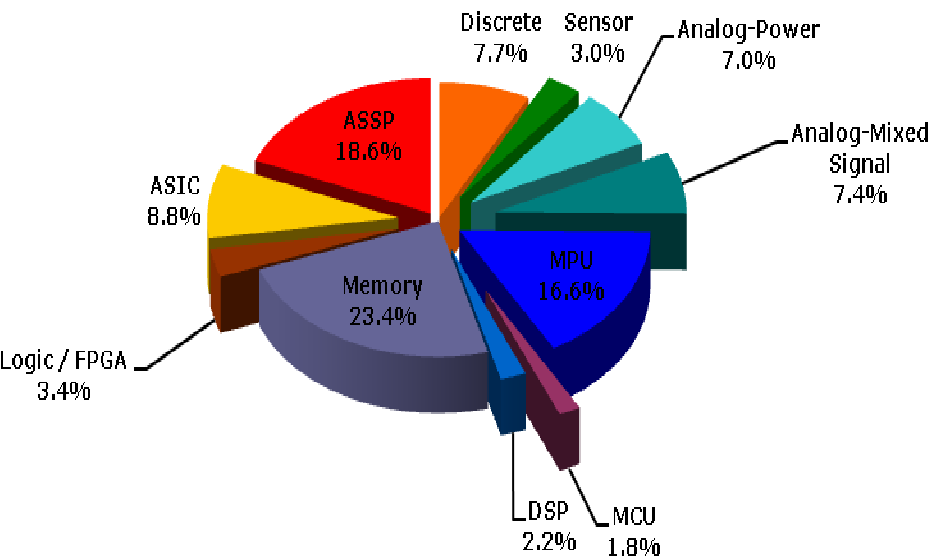
2010 TAM Revenues: $3,144.63 million



- **Addition of local manufacturing capacity** through investment by local vendors capacity ensures mobile devices to remain the mainstay of TAM revenue generation. More investments in local plants to follow.
- **EMS contribution to telecom gear manufacturing boosts TAM revenues**. Forecast period to witness 50 percent growth in telecom semi TAM.
- Increase in manufacturing capacities to meet local **demand for consumer durables to propel TAM** revenues from consumer electronics

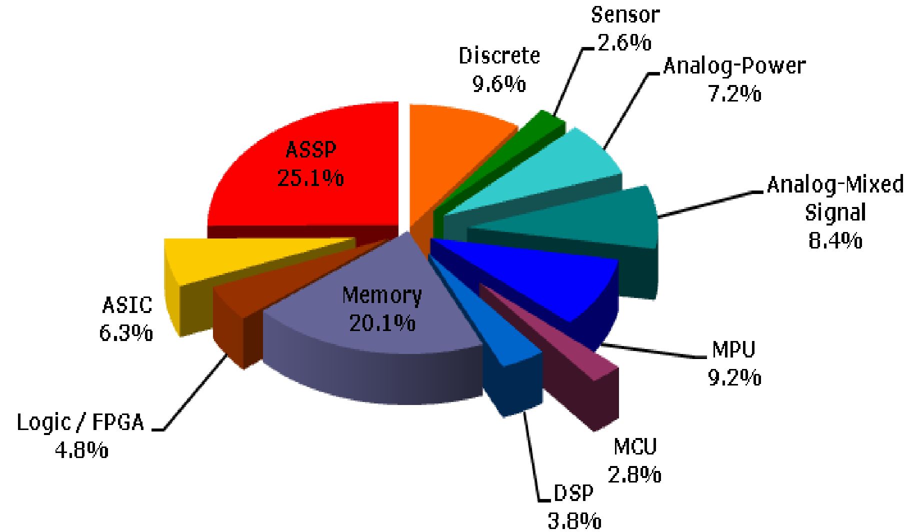
Semiconductor Product Constituents

2010 TM Revenues: $6,550.25 million



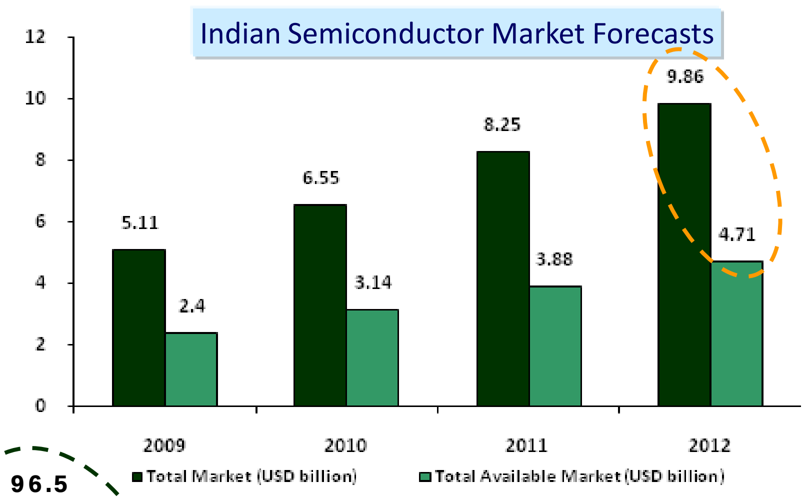
- Ubiquitous usage of **memory** in a wide array of devices makes it the **numero uno contributor to TM**

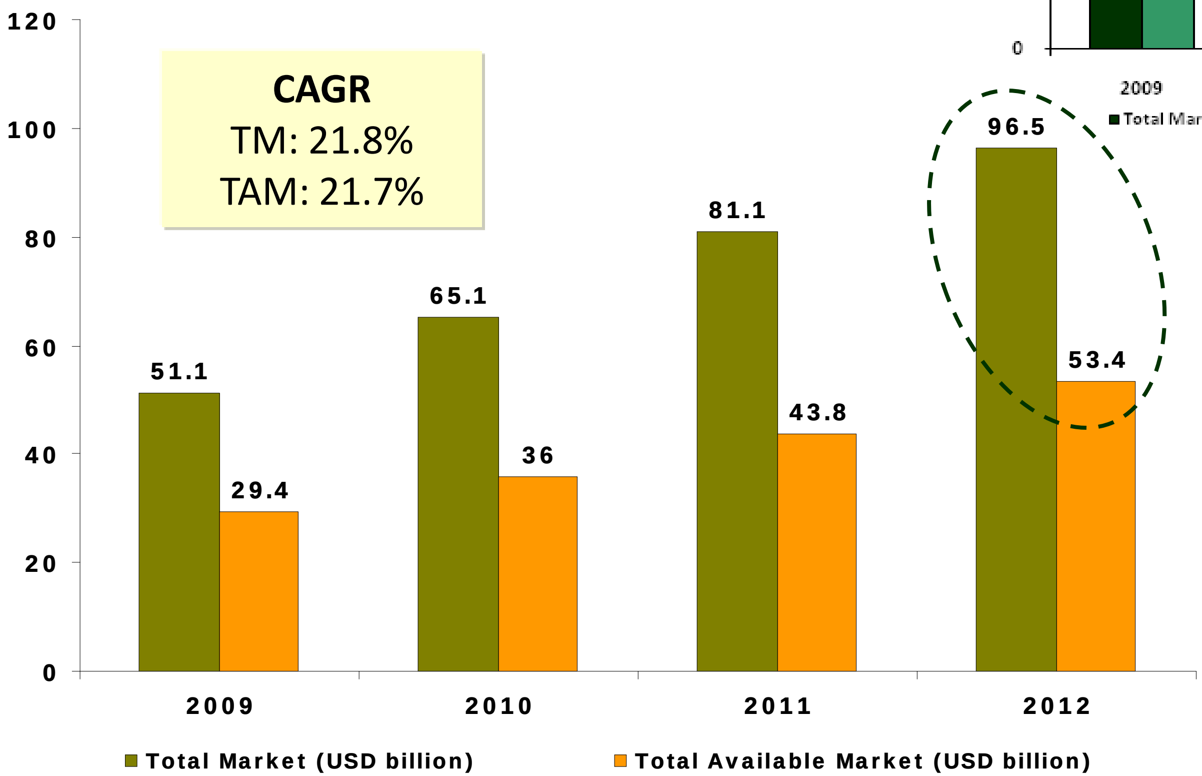
2010 TAM Revenues: $3,144.63 million



- **High volume wireless segment** with its appreciable manufacturing index elevates **ASSP as the chief contributor to TAM revenues**.
- **Inadequate local manufacturing of IT/ OA products** relegates **memory to the second position in TAM** contribution .

Indian Electronics Market Forecasts



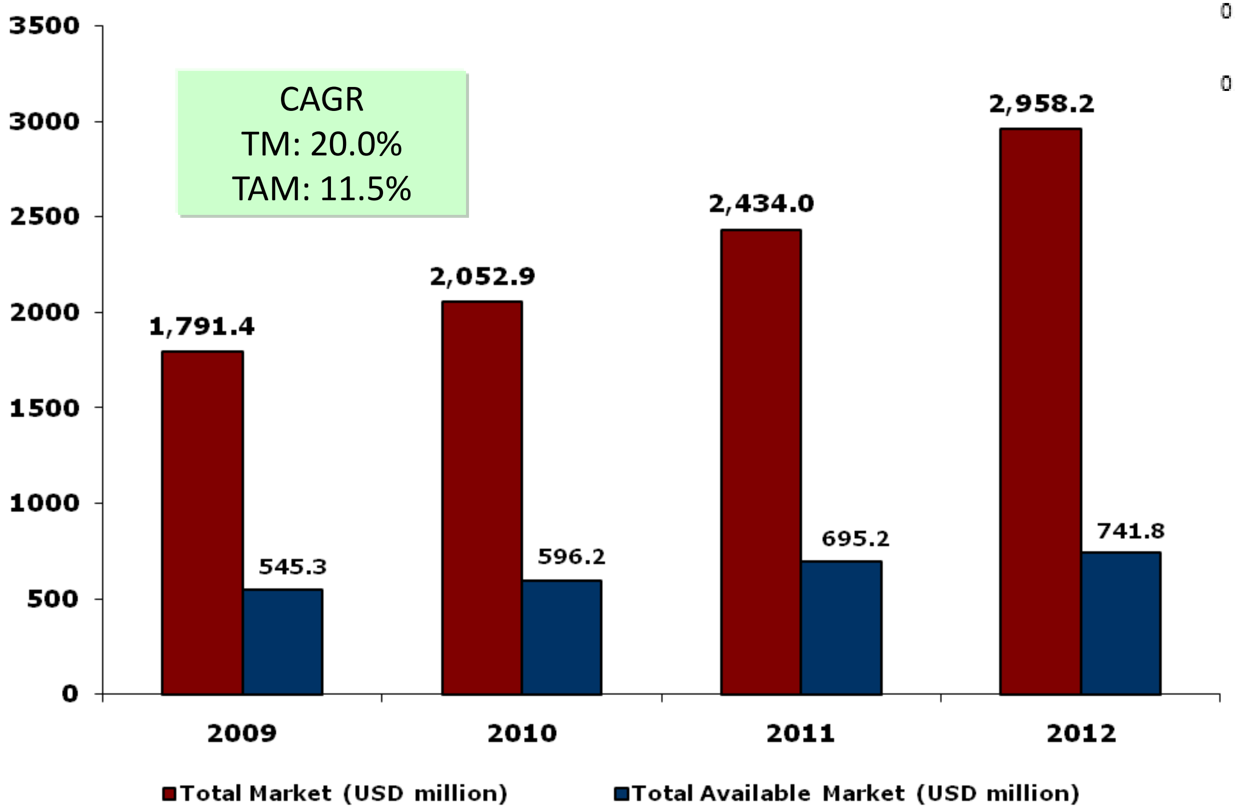


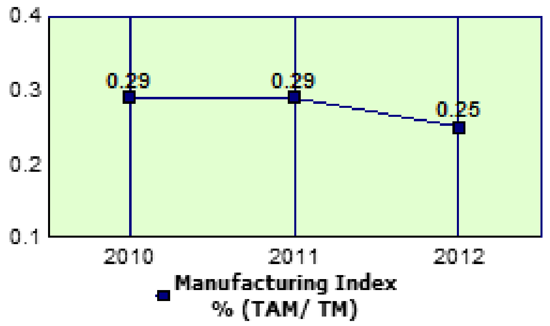
Parity in growth rates of electronics TM and TAM highlight inadequate local manufacturing and the need to address this challenge on an urgent basis

Base Year: 2010, Source: ISA- Frost & Sullivan

IT OA Semiconductor Forecast

Notebooks and Tablets Act as Booster for TM





Base Year: 2010; Source: ISA - Frost & Sullivan

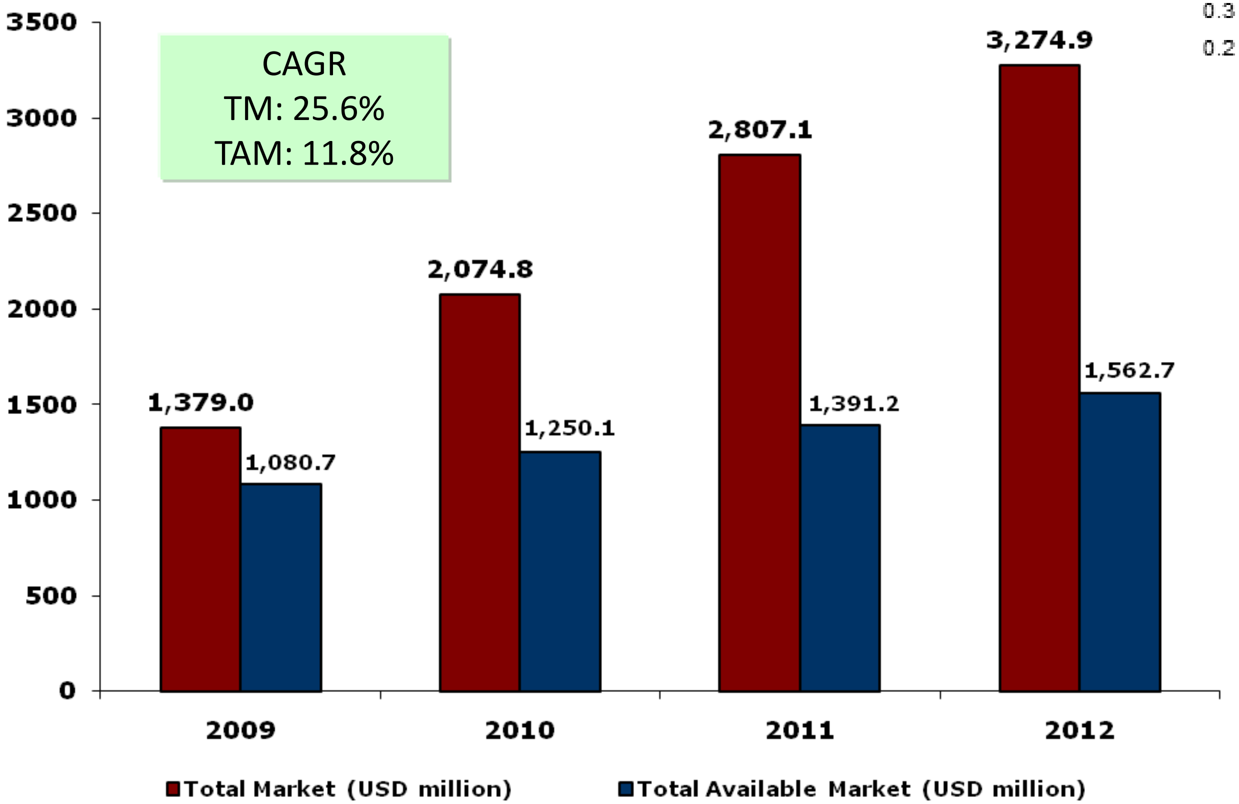
Key Drivers

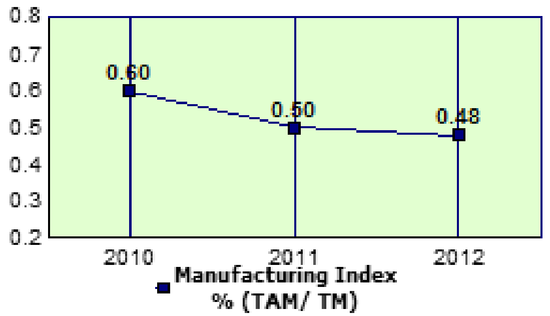
TM: Emerging Tablets market; continuing Notebooks penetration; Extensive demand for Flash memory.

TAM: Sustained demand for desktops emerging from Government's computerization and e-Governance drive.

Mobile Devices Semiconductor Forecast

Spike in 3G and Smart Phone Demand Significant Influencers





Base Year: 2010; Source: ISA-Frost & Sullivan

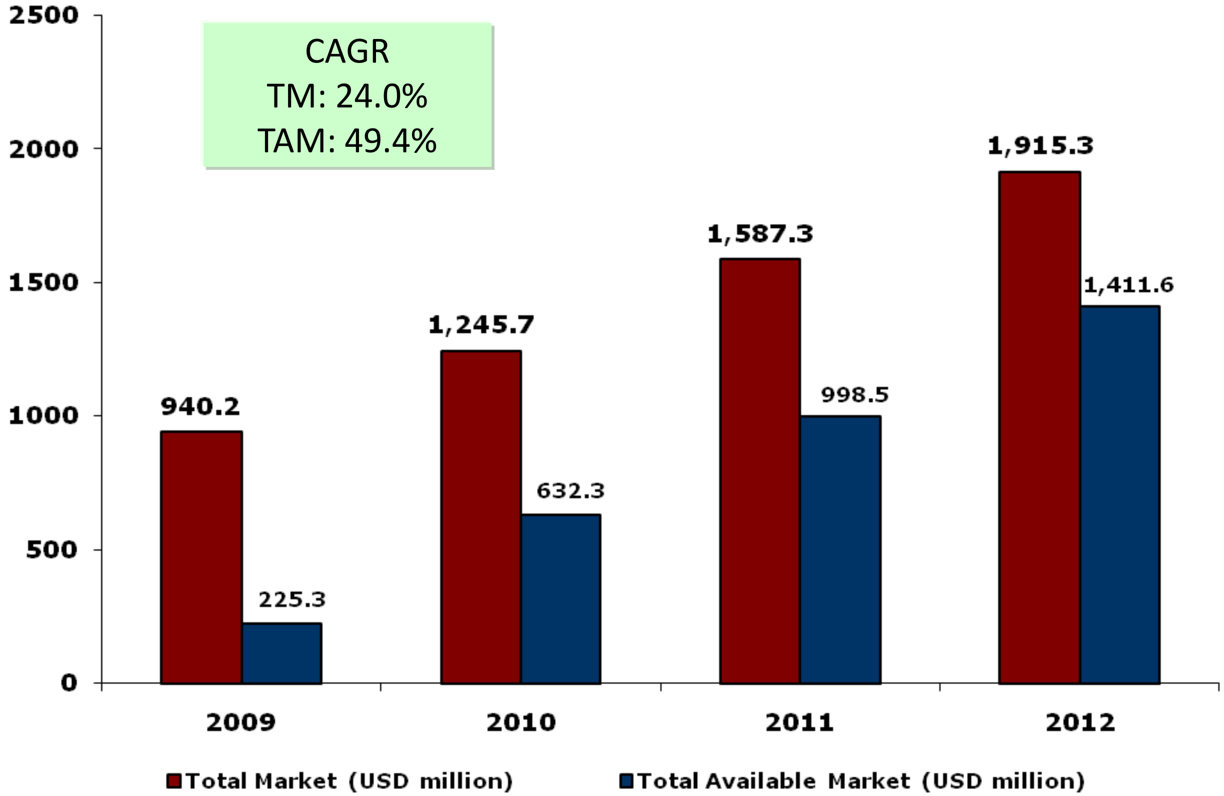
Key Drivers

TM: 3G and smart phones; Data cards.

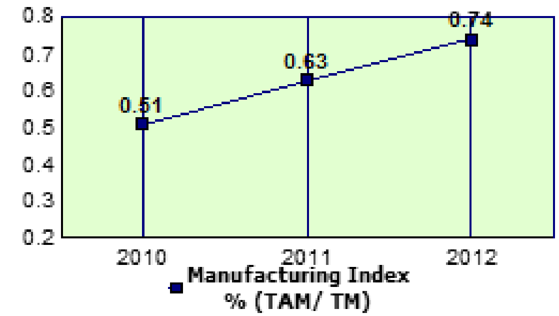
TAM: Influx of local suppliers with aspirations for local production.

Telecommunications Semiconductor Forecast

Local Manufacturing of Base Stations the Elixir for Exponential Growth in Manufacturing Index.



Base Year: 2010; Source: ISA-Frost & Sullivan



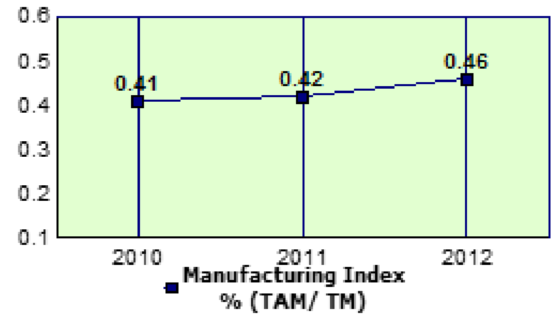
Key Drivers

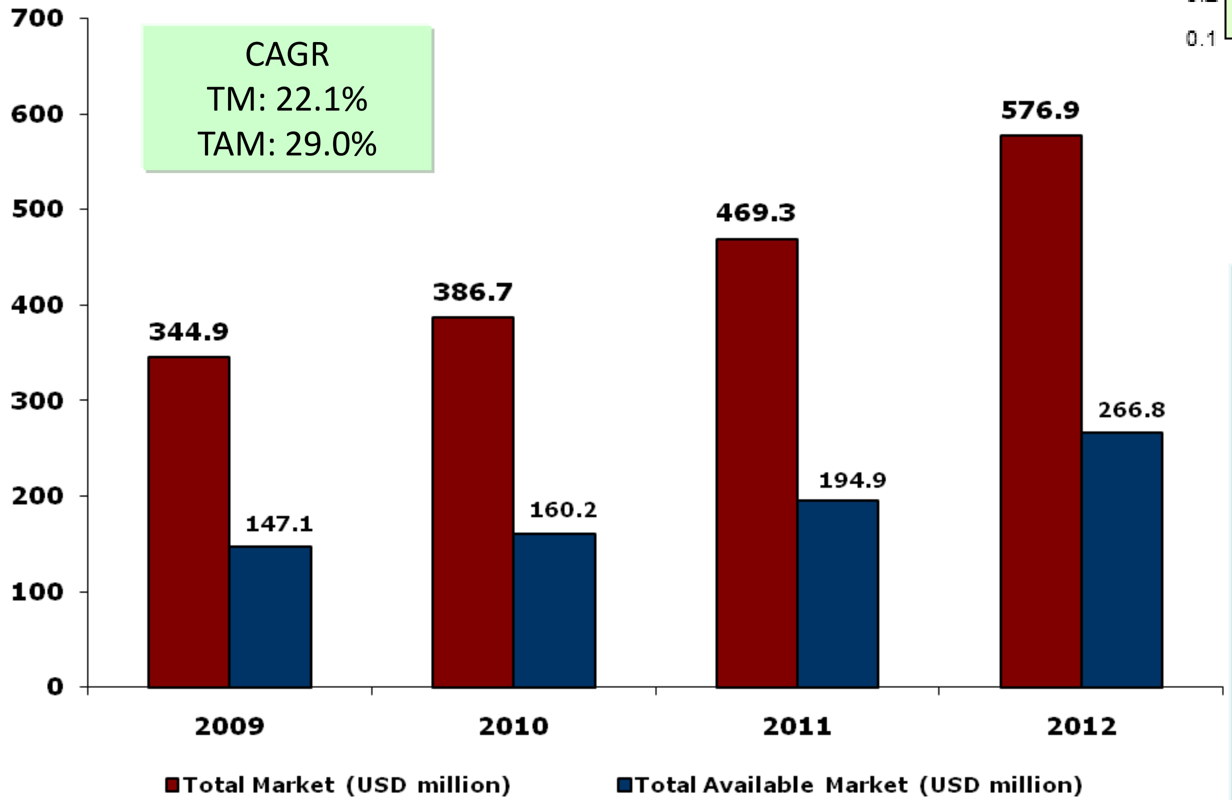
TM: National Broadband Plan; expanding telecom infrastructure and enterprise markets.

TAM: EMS contribution to telecom infrastructure equipment manufacturing.

Consumer Semiconductor Forecast

Explosive Growth of LCD TV and STB adds Zest to TM, TAM





Base Year: 2010; Source: ISA-Frost & Sullivan

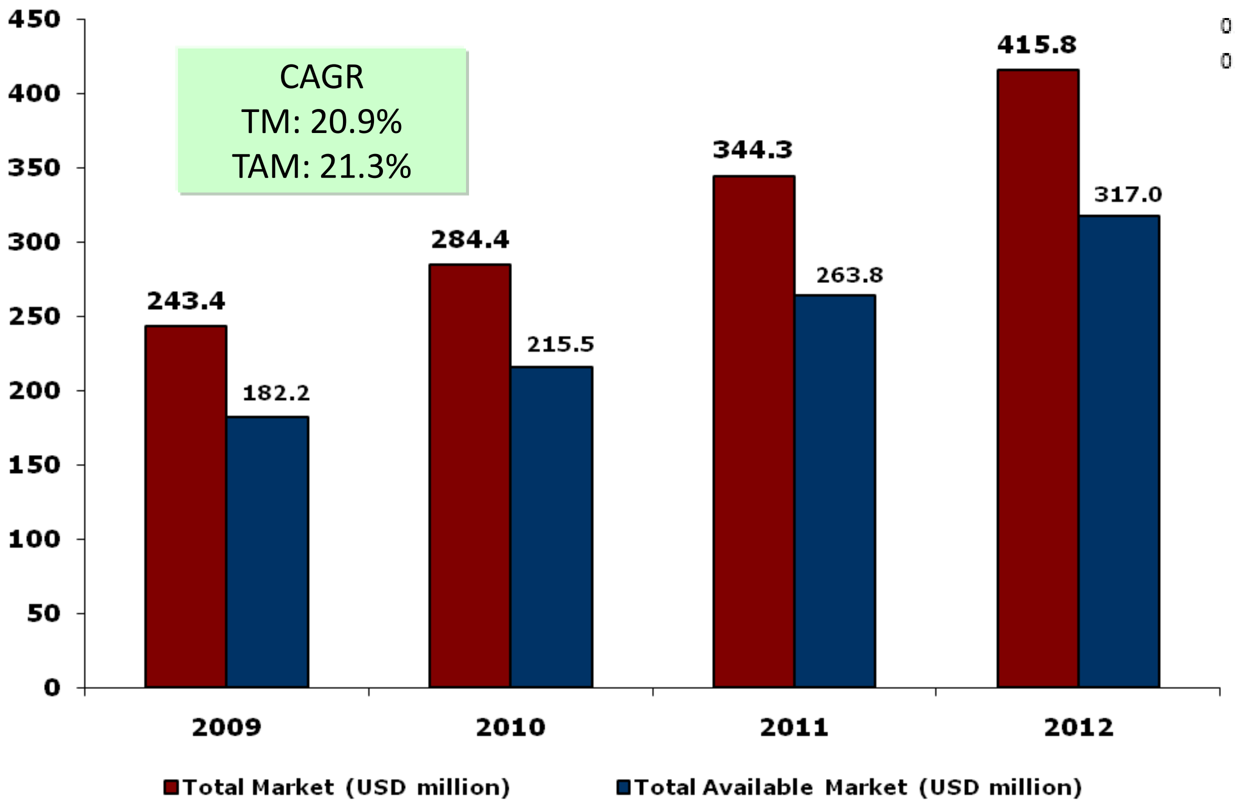
Key Drivers

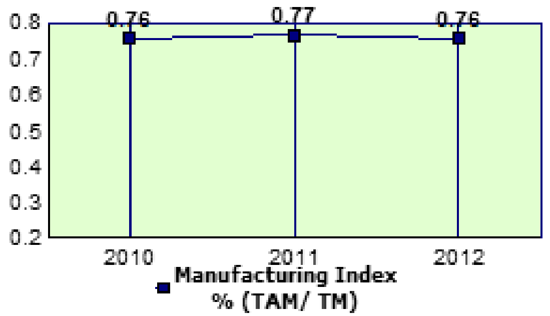
TM: Accelerated replacement of CRT TV with FPD TV

TAM: Increasing proportions of local manufacturing of LCD TV and Set top boxes.

Industrial Semiconductor Forecast

Solid State Technology in Metering and Lighting Induce Growth in Semiconductor Revenues





Base Year: 2010; Source: ISA-Frost & Sullivan

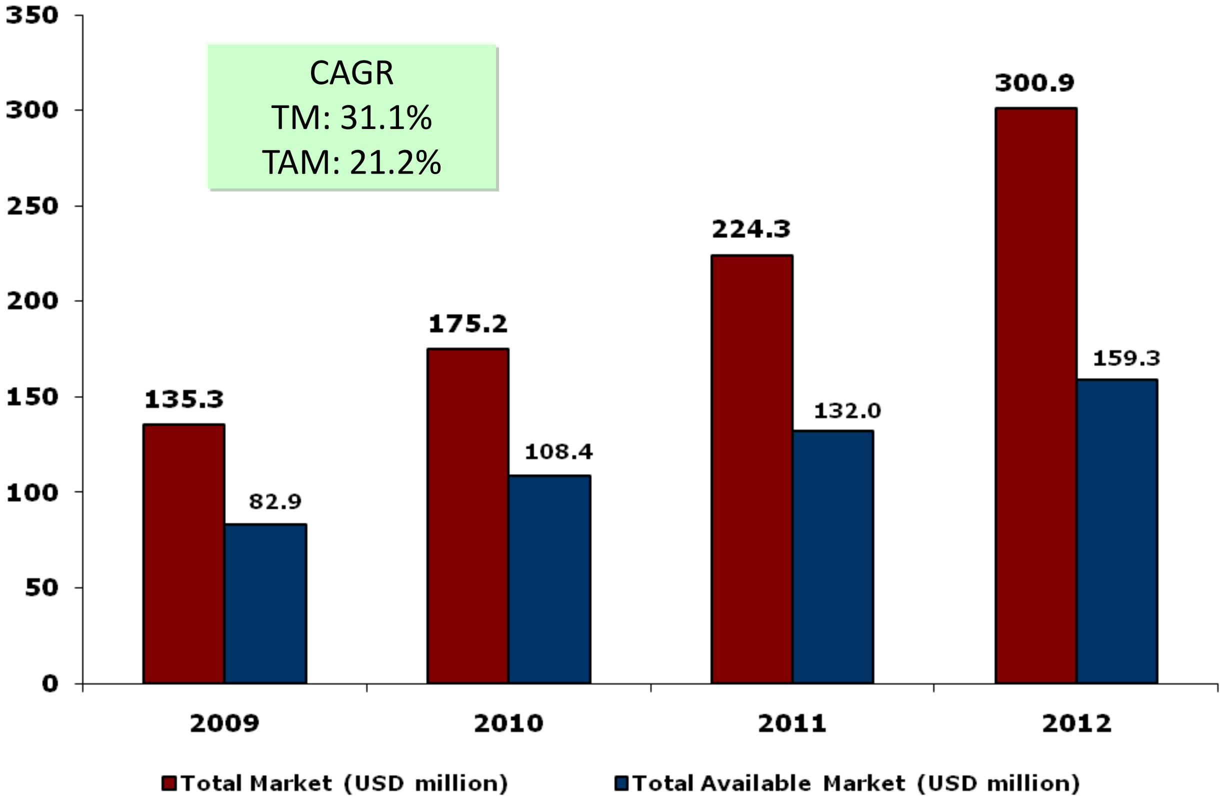
Key Drivers

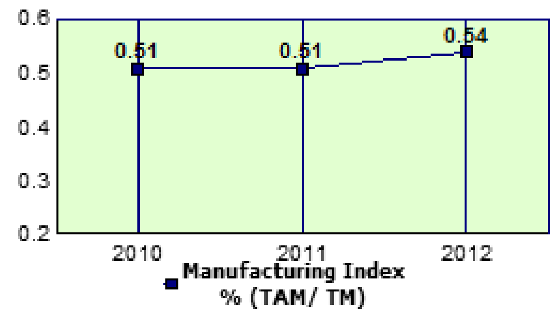
TM: Products enhancing energy efficiency key to TM revenue growth.

TAM: Augmenting capacities for CFL lighting and self sufficiency in metering key for TAM revenue growth.

Automotive Semiconductor Forecast

Environmental Concerns, Safety and Digitization to drive TM





Base Year: 2010; Source: ISA-Frost & Sullivan

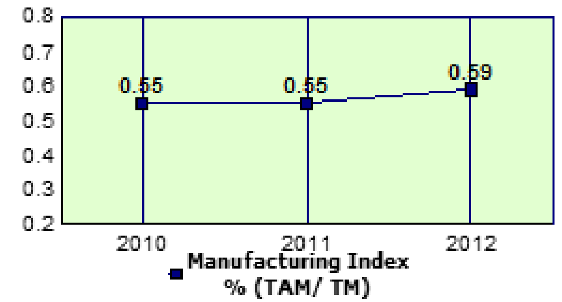
Key Drivers

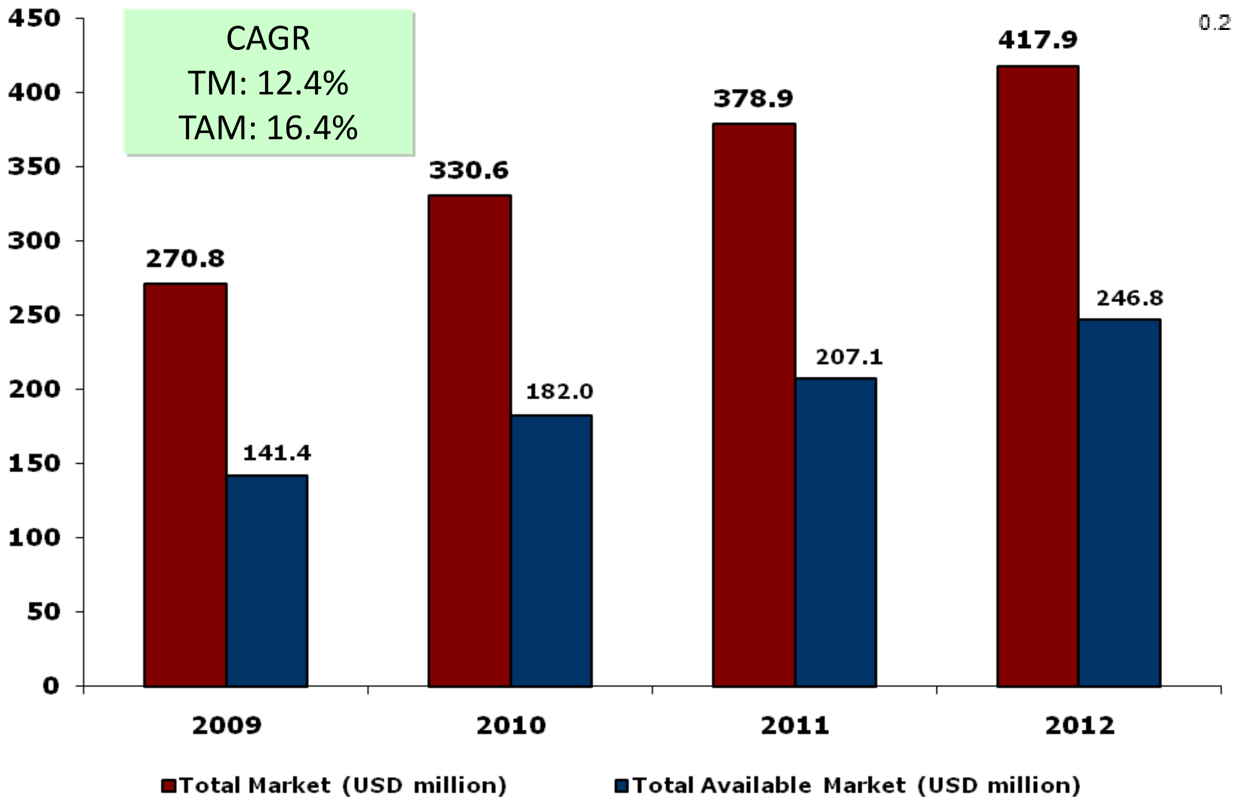
TM: Digitization of controls and expanding inclusion of safety and sophistication features.

TAM: Evolving trend of localization in product procurement by Auto OEMs.

Other Electronics Semiconductor Forecast

Buoyant SIM Growth and Massive Social Sector Investment to Generate Smart Cards related TM, TAM





Key Drivers

TM: ID Programs & Welfare Schemes adopting Smart Cards crucial for TM revenue growth.

TAM: Growing impetus for 'made in India' medical and defence equipment.

Base Year: 2010; Source: ISA-Frost & Sullivan

Summary of Segments

Application Segments	Semi TM CAGR % (2010-2012)	Semi TAM CAGR % (2010-2012)	MI, 2010	MI, 2012	Indigenous Manufacturing Trends
Mobile Devices	25.6%	11.8%	60%	48%	Very slow Growth
Tele Communication	24.0%	49.4%	51%	74%	Good Growth
Consumer Electronics	22.1%	29.0%	41%	46%	Moderate Growth
Automotive Electronics	31.1%	21.2%	62%	53%	Slow Growth
IT/OA	20.0%	11.5%	29%	25%	Slow Growth
Industrial	20.9%	21.3%	76%	76%	Stable Growth
Others	12.4%	16.4%	55%	59%	Moderate Growth

Mobile Devices, Automotive Electronics, ITOA => TM growth exceeds TAM growth => Widening Supply-Demand Situation => Need for immediate measures to boost local manufacturing

MI: Manufacturing index

Conclusions and Future Directions

- Products demonstrating **potential for explosive growth – mobile devices, telecom base stations, LCD TV, STB, EMS, CFL, LED Lights and Smart Cards** & Products with **low MI - Notebooks, Tablets, Set Top Boxes, Routers, Digital Cameras** need to be given **preferential treatment for indigenous manufacturing**.
- India becoming the **hub for small car manufacturing**, **incentives and encouragement** need to be provided for **enhancing automotive component manufacturing in the country** to keep pace with automobile industry growth
- Products enabling **energy efficiency need to be incentivized through tax breaks for R&D** and product development thereby promoting indigenous manufacturing

Electronics & Semi
MI Stagnate at 50%;
TAM growth **unlikely to match** TM growth in near Future!

Continuing Status Quo – Electronics Import Bill to Surpass Crude Import Bill by **2020-21**

Need of the Hour is a **Focused Mission for Local Electronics Manufacturing Promotion**

↓

A National Electronics Development Plan

↓

An Electronics policy for **Ecosystem development; Subsidies for manufacturing; Funds for R&D; Extended Tax Breaks; Hardware Development Parks.**

If, 2011-2020 is Indian Electronics Industry's Golden Decade....

....it Ought to be the Indian Semiconductor Industry's SILVER Decade!!

Thank You!