



# Semiconductor Manufacturing (Fab & OSAT)

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Working Capital & Infrastructure Financing Guide

# SEMICONDUCTOR INDUSTRY – OVERVIEW (2026)

**\$64 Bn**

DOMESTIC DEMAND

**₹1.60 L Cr**

COMMITTED CAPEX

**4 Units**

OPERATING HUBS

**#2 Rank**

ELECTRONICS EXPORT

**20% Share**

GLOBAL DESIGNERS



## The "Fab" Milestone

2026 marks the aggressive construction phase of the Tata-PSMC Fab in Dholera, targeting 50,000 wafers/month at the 28nm node.



## Geopolitical "Alt-1"

Global OEMs are aggressively qualifying Indian facilities as part of a "China Plus One" strategy for mission-critical automotive chips.

# OPERATIONAL PROCESS IN MANUFACTURING

60-90 Days

## Front-End Fab

Lithography, Etching, and Ion Implantation stage.

10-20 Days

## OSAT / Back-End

Wafer dicing, Die bonding, and encapsulation.

2-5 Days

## Testing & Burn-in

Electrical characterization and stress testing.

Ongoing

## Logistics

JIT delivery to smartphone and EV assembly lines.

# KEY RESOURCES & INPUTS



## Infrastructure

- ✓ Ultra-pure water (18-megohm)
- ✓ Redundant power (0% downtime)
- ✓ Vibration-isolated clean rooms



## Materials

- ✓ Polysilicon wafers
- ✓ Neon and Argon gases
- ✓ High-purity photoresists



## Human Capital

- ✓ Process engineers
- ✓ Material scientists
- ✓ Clean-room technicians

# SERVICE DELIVERABLES & REVENUE



## Foundry

Manufacturing for third-party designers (Nvidia, Qualcomm).



## ATMP/OSAT

Packaging wafers fabricated elsewhere (Major volume driver).



## IDM Model

Designing and manufacturing own-brand discrete chips for EVs.



## Materials

Supply of specialized high-purity chemicals and substrates.



## IP Licensing

Revenue from proprietary chip architectures and design blocks.

## Strategic Value

High entry barriers creating long-term Moats and recurring revenue.

# WORKING CAPITAL CYCLE ANALYSIS

Inventory (Materials/WIP)

90 - 150 Days

Accounts Receivable

45 - 90 Days

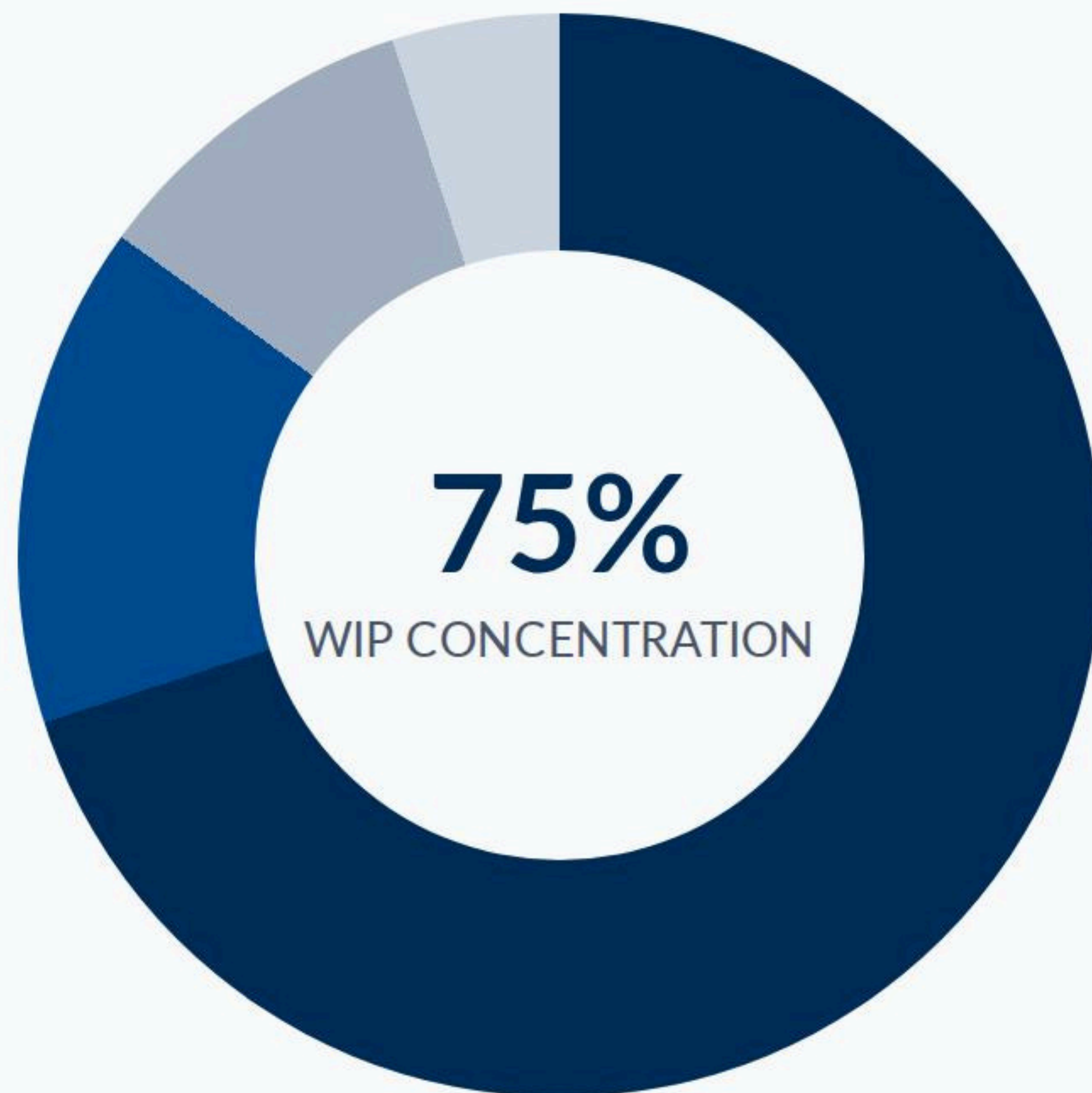
Accounts Payable

30 - 60 Days

## The Cash Gap Challenge

Semiconductor firms face a 60 to 120-day liquidity gap, compounded by massive energy and water costs required for non-stop 24/7 clean-room operations.

# CURRENT ASSET COMPOSITION



- ✓ **Work-in-Progress (60-75%):** Extreme value added during lithography.
- ✓ **Trade Receivables:** Credit-based sales to global auto/consumer brands.
- ✓ **Prepaid Expenses:** Massive AMCs for lithography equipment.
- ✓ **Subsidy Receivables:** 50% capital reimbursement from ISM.

# COMMON MISTAKES TO AVOID



## Yield Neglect

Even a 2% drop in "Wafer Yield" can turn a profitable quarter into a massive loss due to the high input costs of raw silicon.



## Poor Utility Redundancy

A 10-second power dip can ruin an entire batch of wafers worth millions of dollars in the mid-fabrication stage.



## Obsolescence Risk

Over-investing in mature nodes (90nm) when the market is shifting rapidly to sub-28nm for AI and EV applications.



## Talent Churn

High attrition of trained engineers to global rivals leads to critical "Secret Sauce" leakage and process disruption.

# STANDARD OPERATING METRICS (2026)

Metric	Industry Standard	Impact on Financing
Gross Margin (Foundry)	45% - 55%	Allows for higher debt serviceability
Gross Margin (OSAT)	15% - 25%	Requires lean working capital management
Inventory Turnover	2.5x - 4.0x	Indicates efficiency of material procurement
Wafer Utilization Rate	> 85%	Critical threshold for break-even operations
R&D as % of Sales	15% - 20%	Continuous need for long-term IP funding

# REVENUE REALIZATION PERIODS



## Consumer Tech

30-45 Days: Sales to global giants like Apple or Samsung.



## Automotive OEMs

60-90 Days: Standard terms for Tier-1 supply chains.



## Defense Sector

90-120 Days: Extended cycles post-acceptance testing.



## ISM Incentives

180-365 Days: Critical post-audit disbursement of subsidies.

*Best Practice: Use **Supply Chain Finance** to manage utility and chemical bills while waiting for OEM realization.*

# INDUSTRY THREATS & CHALLENGES

- ✘ **High Capex Intensity:** Fabs require constant \$10 Bn+ upgrades every 5-7 years to stay relevant.
- ✘ **Utility Constraints:** Acute shortage of ultra-pure water and uninterrupted power in regional clusters.
- ✘ **Talent Gap:** Need for 85,000+ specialized engineers by 2030; supply currently lags behind.
- ✘ **Trade Wars:** Geopolitical export controls on lithography tools and high-end AI chips.

**Risk Mitigation: Structured financing and government-backed credit guarantees are essential to navigate these high-stakes variables.**

# HOW TERKAR CAPITAL CAN HELP



## Bridge Loans

Immediate liquidity (₹50 Cr - ₹500 Cr) against confirmed central/state capital incentives.



## Equipment Finance

Structured debt for importing DUV/EUV scanners and automated test systems (ATE).



## WC Limits

Up to ₹100 Cr+ to manage high electricity, water, and specialty chemical procurement costs.



## Mezzanine Debt

Assisting in meeting the "25% Promoters Equity" requirement for large-scale Fab projects.



# Partner with Terkar Capital

Financing the Energy Transition for a Sustainable Bharat



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