



Robert Eller Associates, Inc.

CONSULTANTS TO THE PLASTICS AND RUBBER INDUSTRIES

THE TPE MARKET IN INDIA: AN EMERGING MARKET OF GIANT PROPORTIONS

PRESENTED BY:

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PREPARED FOR:

ETIC INDIA SEMINAR

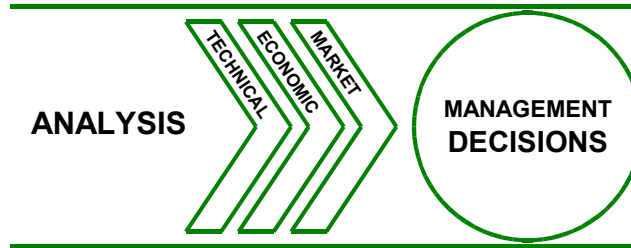
Tokyo, Japan

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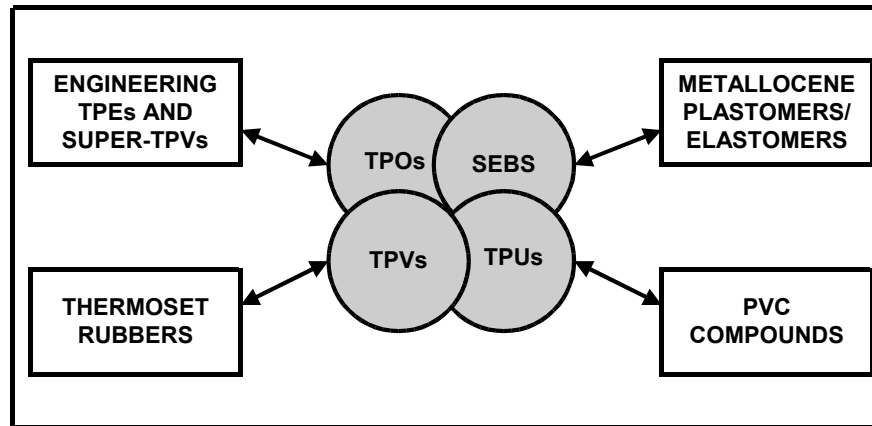


Robert Eller Associates, Inc.
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- **Robert Eller Associates, Inc. is a 15 year-old global plastics consulting company helping companies analyze technical, marketing, and economic implications for their business to facilitate management in strategic decision making.**
- **Offices in Akron, Ohio (home office), Paris, Shanghai, New Zealand**
- **Asia: Active in China (70%), India (20%), Middle East (10%)**
- **5 Key Focus Areas: TPEs, ETPs, automotive, compounding, and foams**
- **Multiclient studies:**
 - **China TPE Market: 2006**
 - **N. America/Europe TPE: 2006**
 - **Automotive Soft Trim: 2004**
 - **Automotive Nonwovens: 2004**
- **Single-client studies**
- **Mergers and acquisitions:**
 - **Complete management service for small acquisitions**
 - **Due diligence**
 - **Technical advisors**



Specialty Thermoplastic Elastomers . . . Markets, Economics, Intermaterials Competition, and Industry Structure in China



A Multiclient Industry Analysis

2006

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OBJECTIVES TODAY

- **Contrast China vs. India**
 - **What is the status of the Indian markets?**
 - **What can be learned from the China model?**
 - **What will be different?**
 - **How can we apply the lessons?**
 - **What are the implications for TPEs?**

- **The India TPE Industry Structure**
 - **Domestic players**
 - **MNCs**

CHINA vs. INDIA COMPARISONS

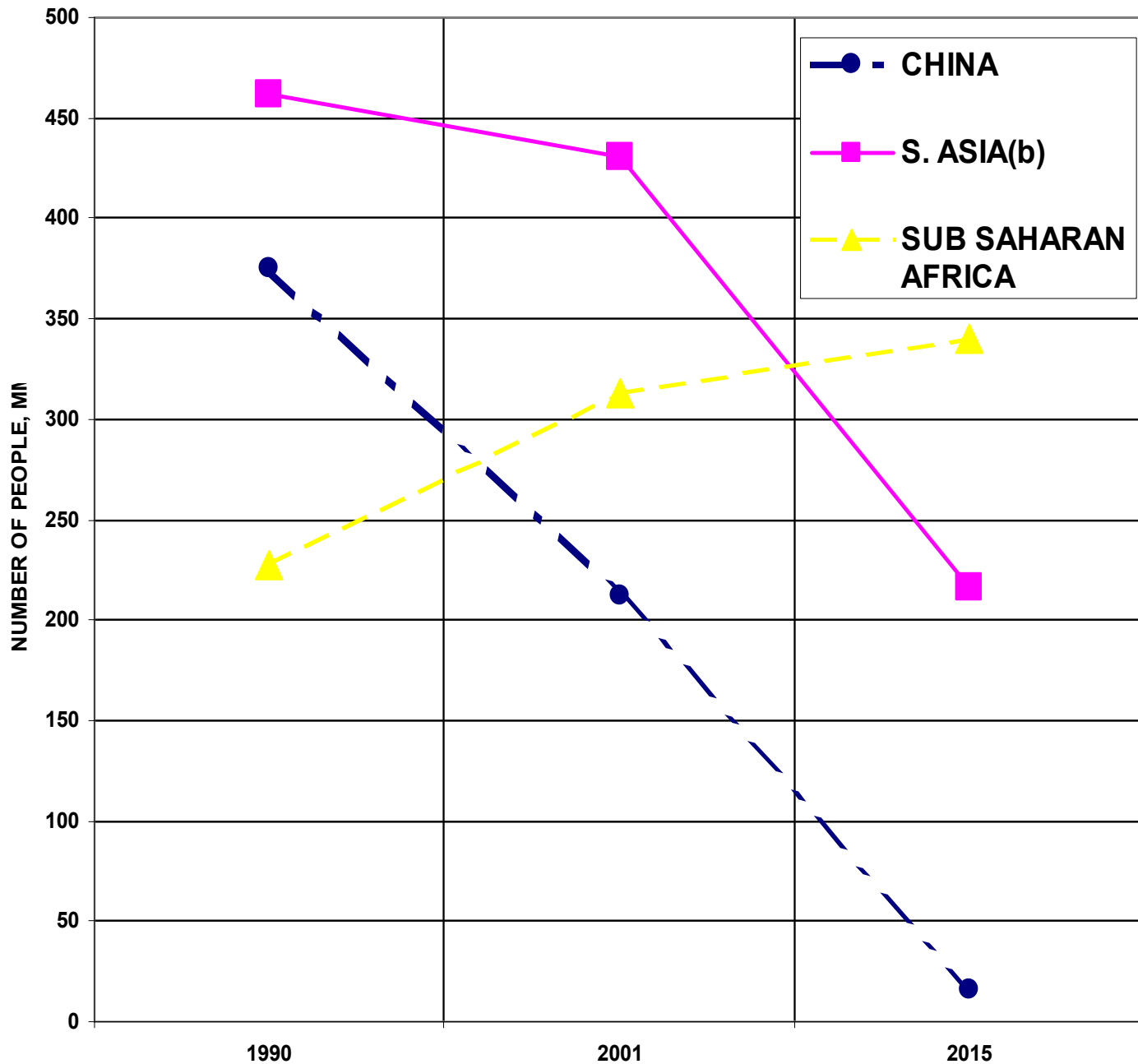
CATEGORY	CHINA	INDIA
DEMOGRAPHICS:		
POPULATION, i.e., POT'L. MKT.	1.306BN	1.080BN
POPULATION GROWTH RATE	0.6%/YEAR	1.4%/YEAR
LANGUAGE	MANDARIN	HINDI/ENGLISH
MEDIAN AGE	32.3 YEARS	24.7 YEARS
ADULT LITERACY RATE	90.9%	59.5%
GOVERNMENT:		
FORM OF GOVERNANCE	AUTOCRACY	DEMOCRACY
PLANNING	CENTRALIZED, FOCUSED	DECENTRALIZED, WAVERING
OFFICIAL CORRUPTION	PREVALENT, NARROW	PREVALENT, BROAD
TAXES	HIGH NON-UNIFORM	HIGH --
TRANSPORTATION:		
ROADS	FAIR IMPROVING RAPIDLY IN INDUSTRIALIZED AREAS	POOR MAJOR IMPROVEMENTS
AIR TRANSPORT (INFRASTRUCTURE QUALITY)	EXCELLENT	FAIR MAJOR IMPROVEMENTS
COMMUNICATIONS:		
TELEPHONE ACCOUNTS (LAND AND MOBILE)	532MM	75MM
INTERNET ACCOUNTS	94MM	19MM

CHINA vs. INDIA COMPARISONS

CATEGORY	CHINA	INDIA
ECONOMIC TOPICS:		
FOREIGN INVESTMENT (DIRECT & INDIRECT)	HIGH (15X)	LOW
INVESTMENT AS % GDP	46%	24%
TARIFFS	MODERATE	MODERATE
INTELLECTUAL PROPERTY PROTECTION	POOR	GOOD
GENERAL PLASTICS MARKETS:		
PER CAPITA COMMODITY PLASTICS DEMAND	22 KG	4 KG
PLASTICS PRODUCTS	US\$47.4	US\$8.5
OPERATIONS COSTS:		
ELECTRICAL INFRASTRUCTURE	AVERAGE	FAIR
POWER FAILURES/MONTH	17	5
LABOR COST	LOW, RISING RAPIDLY	VERY LOW, STABLE
GENERAL MANUFACTURING:		
PRODUCT QUALITY	IMPROVING, VARIABLE	EMERGING, POOR
DOMESTIC MACHINE & TOOL CAPABILITIES	IMPROVING RAPIDLY	IMPROVING
SUCCESSFUL BUSINESSES	MANUFACTURING, AUTOMOTIVE, MEDICAL, ELECTRONICS	SERVICE CENTERS, SOFTWARE, LABOR COST-SENSITIVE MFG.

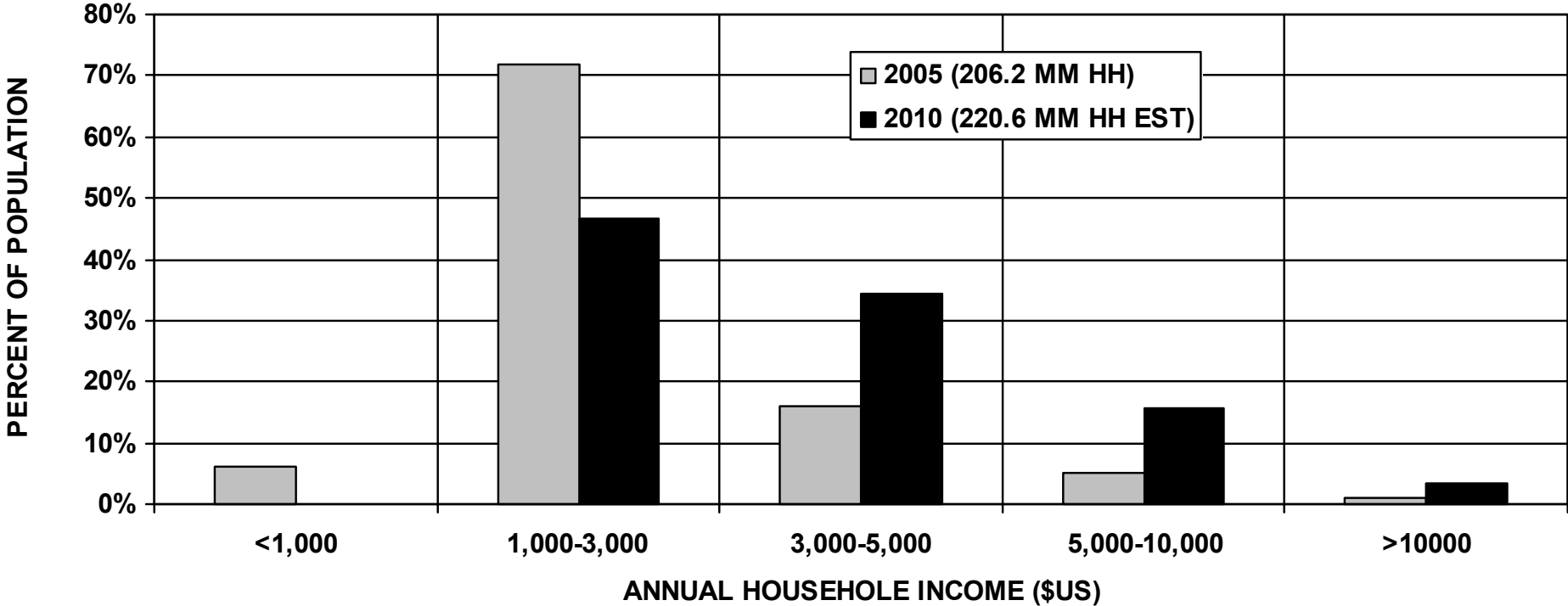
SOURCE: ROBERT ELLER ASSOCIATES, INC., 2007

POPULATION LIVING IN EXTREME POVERTY



SOURCE: ROBERT ELLER ASSOCIATES, INC., 2007

2005-2010 COMPARISON OF PURCHASING POWER OF HOUSEHOLDS IN INDIA



DATA SOURCE: ROLAND BERGER, 2007

bob/mydox/chindia/charts

INDIA WILL GROW RAPIDLY DUE TO UNSTOPPABLE DEMOGRAPHIC DRIVERS

- **Population:** 1.08BN, growing at 1.44% p.a.
- **Age Profile:** 35% of Indians are below the age of 15, and 50% are below 25; age group 25-34 is the second largest group
 - most educated among adult groups – high income earning potential
- **Per Capita Income:** has grown at 10.5% CAGR for last 10 years, while peak personal tax rates are down from 50% to 30%
- **Demand Growth:** for consumer and convenience goods is causing local *Manufacturing Economy to be created* (consumer durables, FMCG, auto/transportation, water etc.)
- **Change in Social Norms:** Breaking down of family system, boosting demand for housing and consumer durables

CONSUMPTION OF COMMODITY MATERIALS BY REGION (PER CAPITA)

REGION	DEMAND, KG/CAPITA
N. AMERICA	90
W. EUROPE	65
CHINA	22
LATIN AMERICA	18
E. EUROPE	10
S.E. ASIA	10
INDIA	4
TOTAL	219

SOURCE: ROBERT ELLER ASSOCIATES, 2007

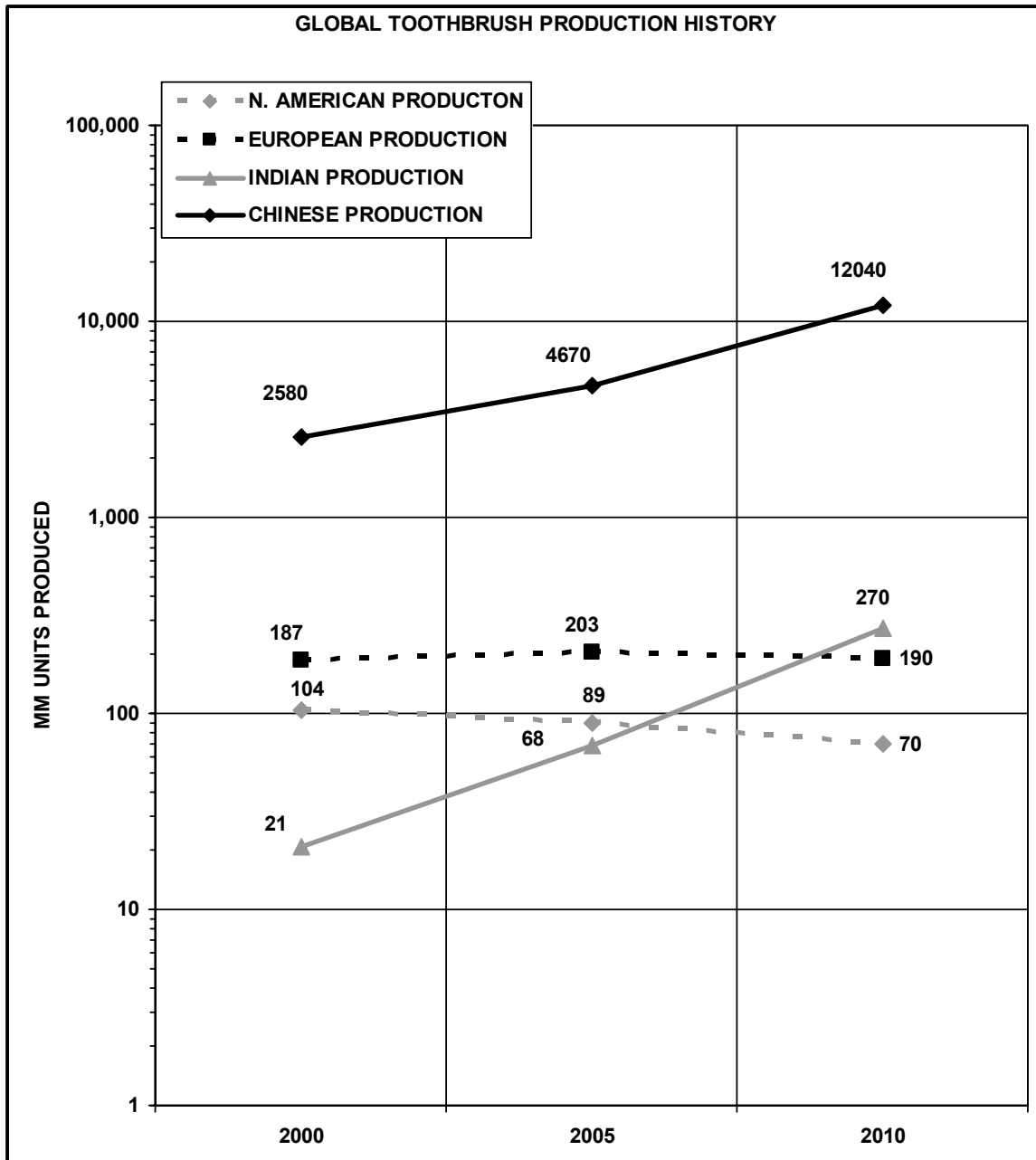
ROLE OF INDIA IN GLOBAL COMMODITY PLASTICS MARKET

ELEMENT	GLOBAL	ASIA	INDIA
CAPACITY ('000 kT)	168	73	4.6
PRODUCERS	140	64	47
OPERATING RATE (%)	86	87	102
DOLLAR VALUE (\$B)	150	66	5
CONSUMPTION PER CAPITA	22	17	4

IMPACT OF CHINA'S GROWTH

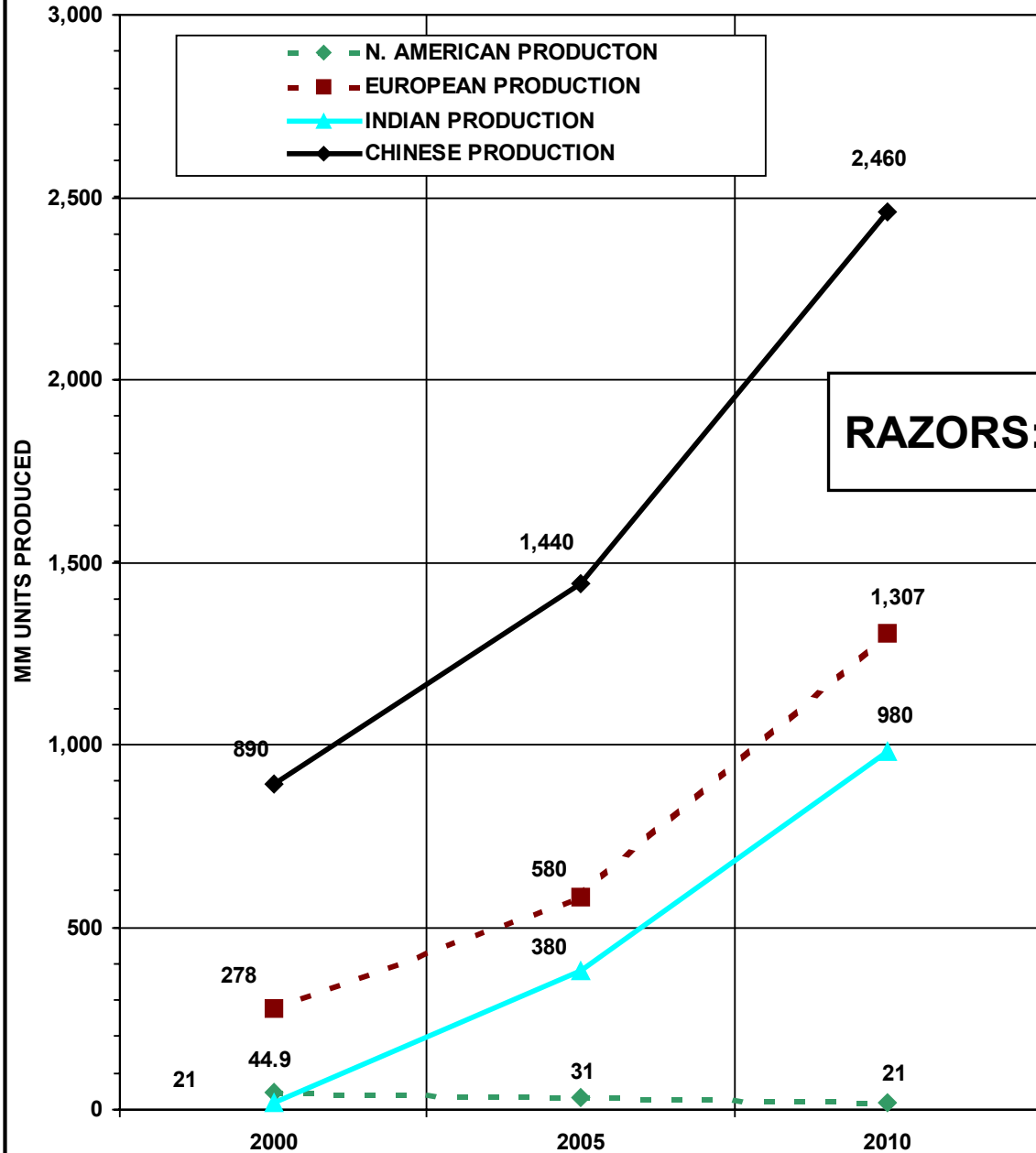
- China is pushing up global prices of oil, steel, copper, chemicals – **everything it consumes**
- China is driving down global prices of textiles, tools, appliances, and toys – **everything it produces**
- China is a major purchaser of U.S. Treasuries – **funding the U.S. deficit and consumption**
- China's domestic TPE compounders typically have a 30% cost advantage to foreign competitors

TOOTHBRUSH MANUFACTURING: CHINA 6X INDIA



SOURCE: ROBERT ELLER ASSOCIATES, INC., 2007

GLOBAL WET RAZOR PRODUCTION HISTORY



RAZORS: CHINA 3.5X INDIA

SOURCE: ROBERT ELLER ASSOCIATES, INC., TPE MULTICLIENT STUDY, 2006

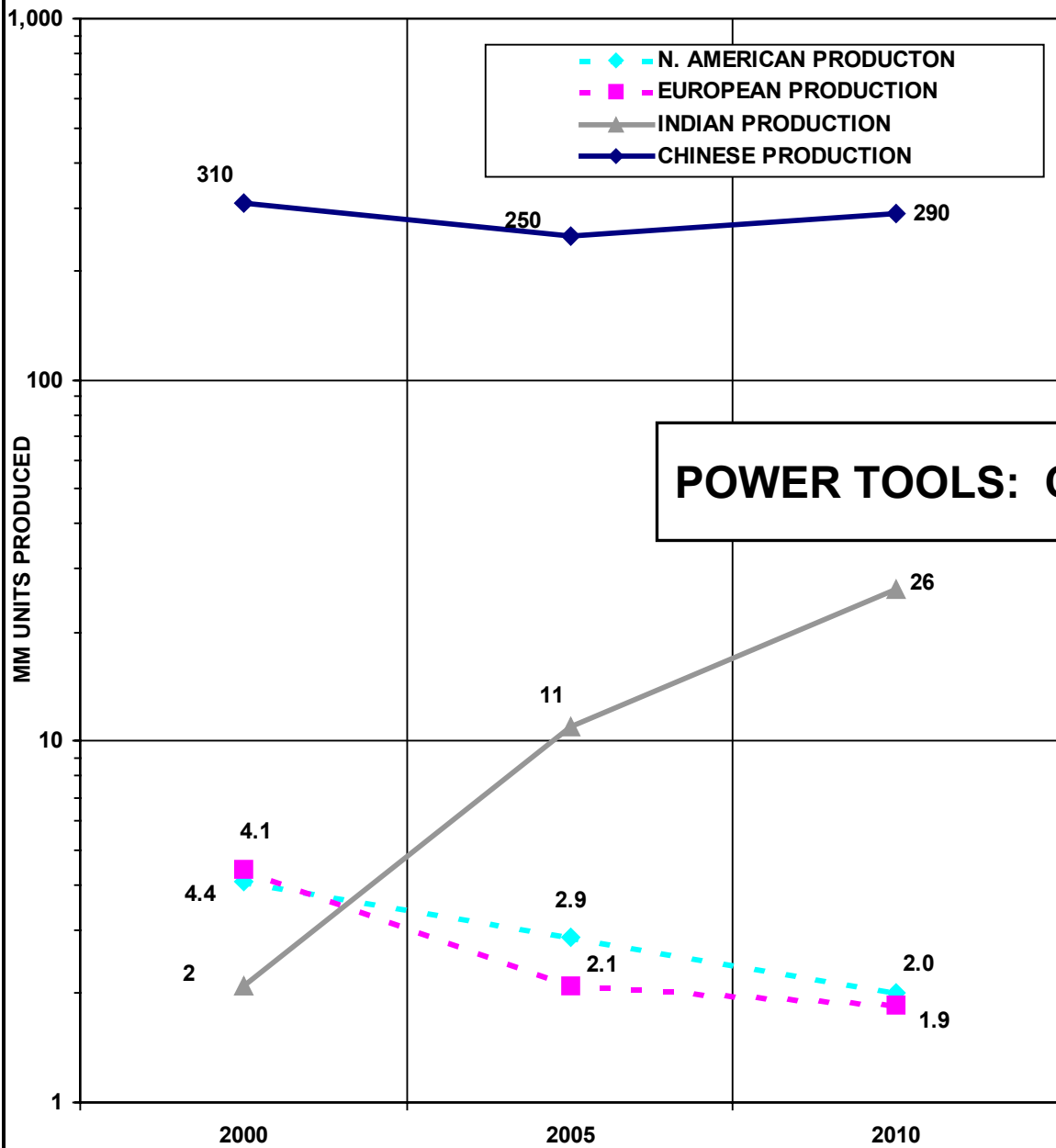


Manufacturer: Gillette
Product Name: Mach 3, Grip
TPE Type: SEBS
Bond Type: Physical
Mfr. Location: China

Note: Grip and head with different TPEs

Manufacturer: Gillette
Product Name: Venus 3
TPE Type: SEBS
Bond Type: Chemical
Mfr. Location: Poland

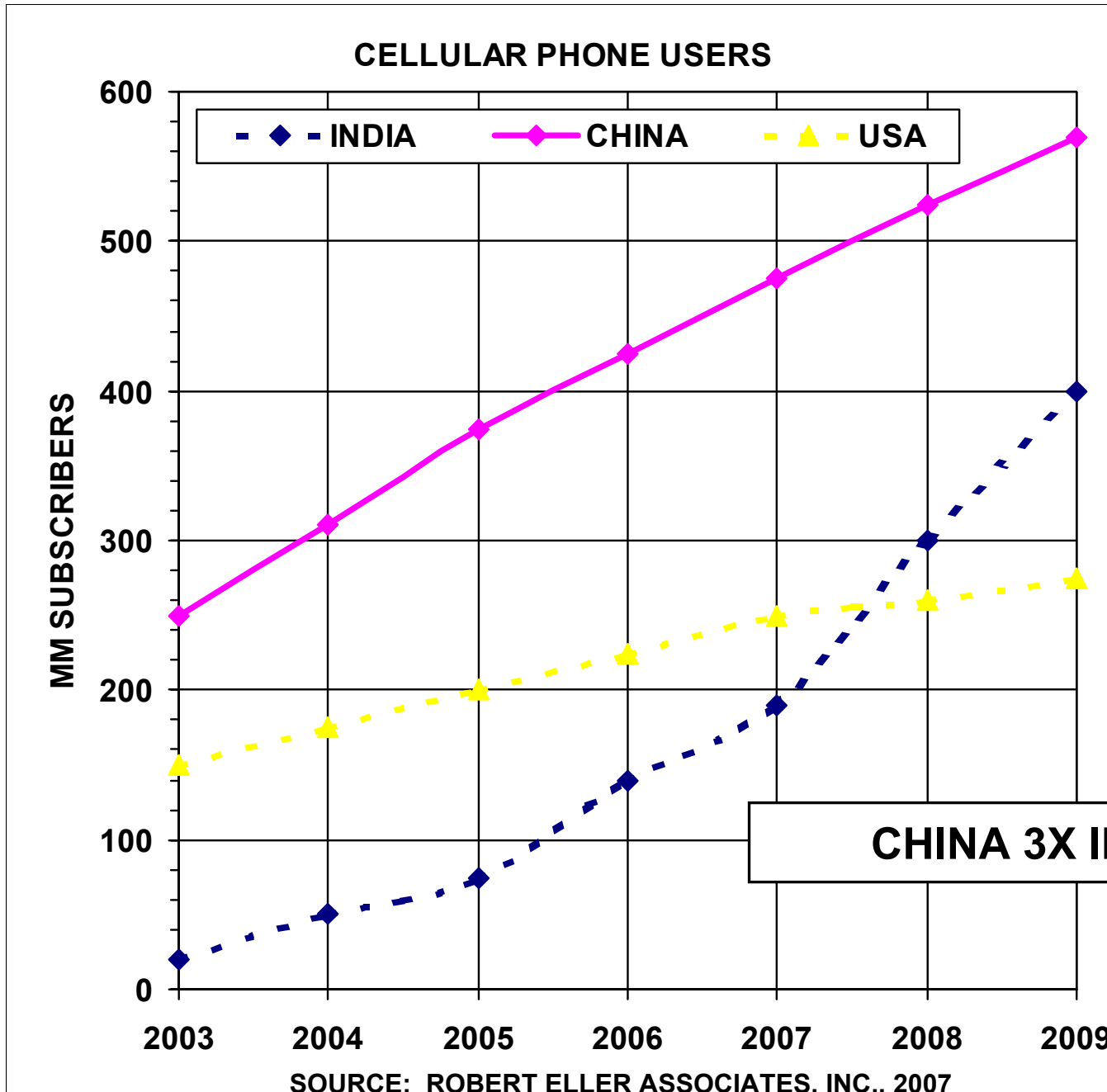
GLOBAL POWER TOOL PRODUCTION HISTORY



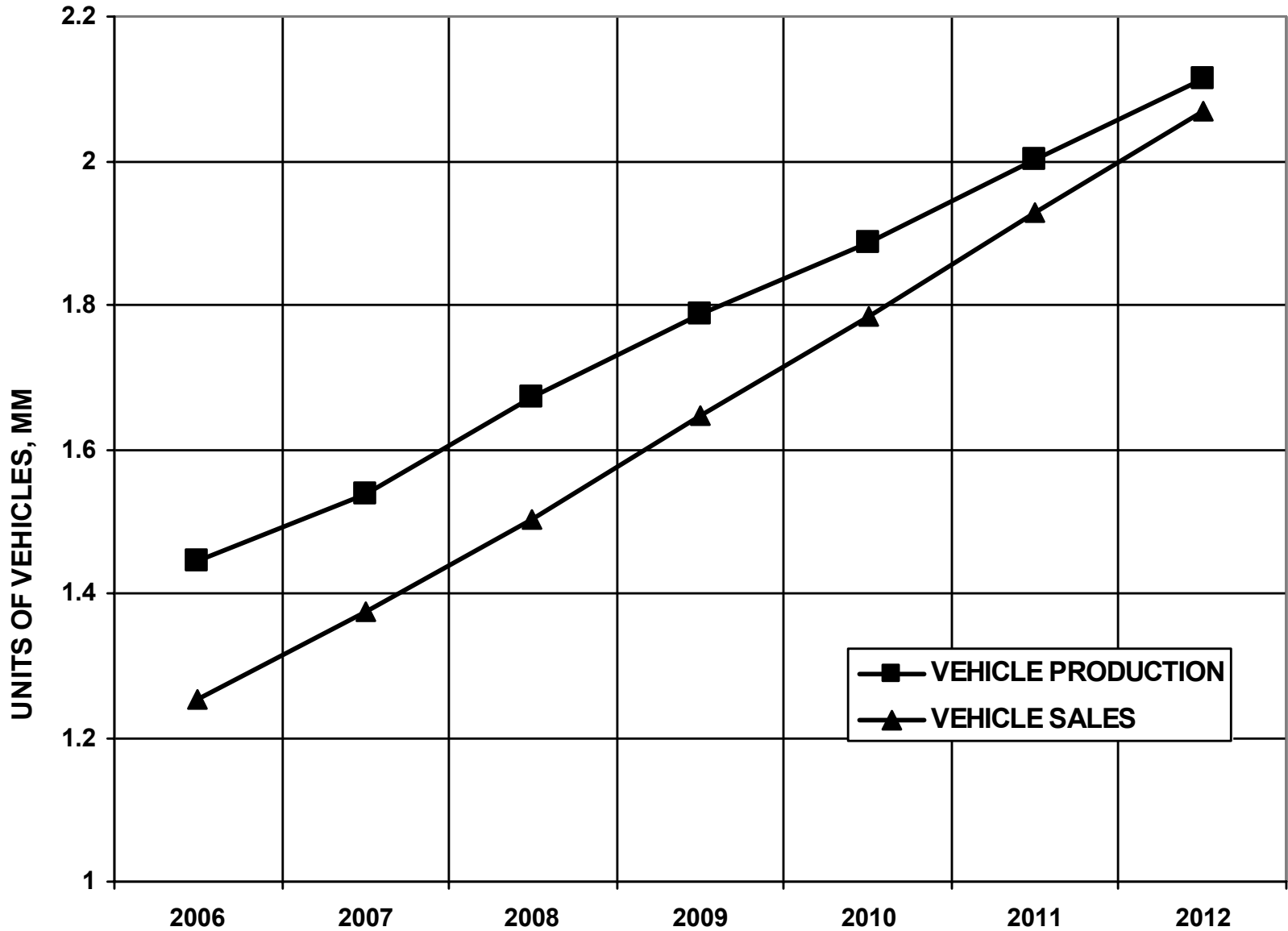
POWER TOOLS: CHINA >20X INDIA

SOURCE: ROBERT ELLER ASSOCIATES, INC., TPE MULTICLIENT STUDY, 2006

INDIA, CHINA, AND U.S. CELL PHONE USE (MM PEOPLE)



PASSENGER CAR MARKET IN INDIA (2006-2012)



DATA SOURCE: ROLAND BERGER, 2007

bob/mydox/chindia/charts

TPV DEMAND IS GROWING, BUT STILL A SMALL MARKET

- **Global TPV Vehicle Usage:**
 - **2005: 2.1 kT/vehicle**
 - **2010: 2.6 kT/vehicle**
- **India Auto Demand 2010 -- 5.5 kT**
- **Automotive in N. America/Europe approx. 50% of TPV demand**
- **China < 4MM cars, TPV demand 30%, changing rapidly in 2006/2007 as auto demand increased past 6MM cars**
- **Total India TPV demand 2010 – 15-16 kT**

TPE MARKETS: AN EMERGING MARKET STATUS REPORT

TPE Markets

- **Auto:**
 - **TPV will dominate demand**
 - **Seals will be a driver**
 - **Airbag doors**
 - **Large-part soft touch for door panels and inst. panels**
 - **Low cost A/B car demand will be high (PP and TPO intensive)**
- **Footwear: much smaller than China (< 5 kT compound)**
- **Stationery/Personal Care: rapid growth**
- **Electrical/Electronics: will require increased rate of manufacturing shift**
- **Wire/Cable**
- **Medical: small, evolving applications**

DOMESTIC INDIAN TPE COMPOUNDERS

COMPANY	TPE-S	o-TPV	TPU	TPO	NOTES
BAYER			X		
HYDRO S&S		X (p-TPV)			AGENTS FOR SANTOPRENE (f-TPV)/ COMPOUNDER FOR p-TPV
MACHINO-BASELL INDIA (MBI)				X	
SYNERGY MULTIBASE	X				
SYNOPRENE POLYMERS	X	X	X	X	
TECHNOVINYL	X	X	X	X	
TIPCO	X			X	MITSUI RELATIONSHIP ADVANCED TPEs FROM AMF POLYMERS
ZYLOG		X		X	

SOURCE: ROBERT ELLER ASSOCIATES, INC., 2007

ENTRANCE OF MNCs INTO INDIA

- **Slower movement from N. America/Europe (China is the current larger target)**
- **Entrants:**
 - **Japan: India a preferred option?**
 - **NA/Europe: PolyOne, Noveon, Merquinsa**
 - **Asia: SPC**
 - **Domestic: Supreme?**
 - **Large material suppliers positioning themselves (Dow, BASF, GE)**

ASIA GROWTH

- **Asia Pacific, led by India and China, will see robust economic growth through at least the next decade.**
 - **Domestic demand key, not just exports**
 - **China significantly ahead in manufacturing, but India will close the gap**
- **Growth is not restricted to India and China; ASEAN and ANZ have healthy growth rates.**
- **It is a global world. Manufacturing will operate in an internationally competitive environment: low cost producer meeting local quality needs will ultimately be the survivors.**
- **Understanding Asia is important for all producers, regardless of their position in the value chain.**

Thank You!



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