

# **BRAVING NEW TECHNOLOGY WORLD**

**A CASE OF LEATHER SECTOR  
T RAMASAMI**

# MOTIVATION FOR THE TALK

- ❖ **Since industrial revolution, Technology is the most influential game changer in human civilization and has changed dramatically the way people live.**
  - ❖ In less than ten years, world has changed so much that people feel unable to live without mobiles! Resisting technology-overtake seems a civilizational challenge today
- ❖ **Could a traditional sector like Leather afford to be by passed by technology changes?**

# SOME TECHNOLOGIES WHICH TRANSFORMED LIVES

## 1. Human health care: Biotechnology

- ❑ Anti-biotic: Changed the life expectancy at birth for people
  - ❑ Changed from 24-27 in 1900 to late sixties in 2010s
- ❑ Vaccines and nutrients
  - ❑ Child mortality is reduced significantly

## 2. Communication: Electronics technology

- ❑ Internet and wireless communication
  - ❑ Changed tele-density and offered connected people

## 3. Transportation: Automobiles and Aeronautics

- ❑ Mobility of people from renewable energy to motorized systems and aviation sector
  - ❑ Changed travel time significantly

# **A CHOICE-LESS GAME THAT LEATHER SECTOR NEEDS TO PLAY**

**TECHNOLOGY CHANGES  
COME WITH FEAR FOR  
TRADITIONAL MIND SETS.  
LEATHER SECTOR NEEDS  
TO PLAY AND BRAVE THE  
MIND GAME OF  
TECHNOLOGY CHANGES**

# **LEATHER SECTOR SINCE 1950S**

**TECHNOLOGICAL  
CHANGES IN OTHER  
SECTORS HAVE FORCED  
CHANGES IN LEATHER  
INDUSTRY**

# TECHNOLOGIES FROM OTHER SECTORS WHICH TRANSFORMED LEATHER SECTOR

## 1. Product design and development

- Computer Assisted Design and pattern nesting and cutting

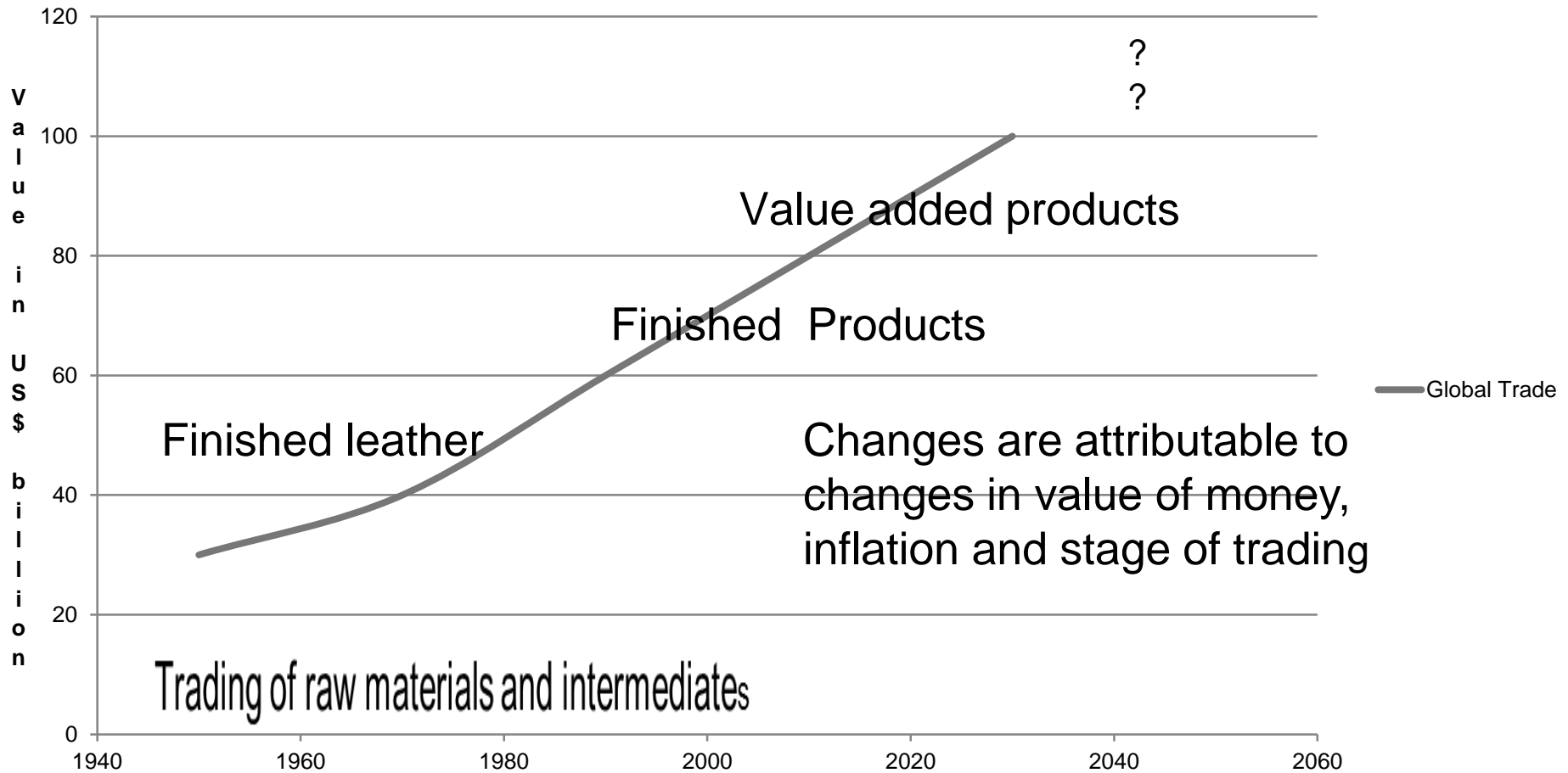
## 2. Leather Processing

- Enzyme assisted methods and mechanization in beam house
- Environmental Technologies for waste water treatment
- Surface coating in leather finishing

## 3. Footwear construction

- Line-assembly techniques and automation

# Global Trade



## STEADY CHANGES IN LEATHER TRADE

Would sectors based on natural endowments change drastically?

# **TECHNOLOGIES AROUND LEATHER SECTOR: REALITY**

- 1. As leather moves progressively into high price segment of the market, man-made substitutes thrive for use in high volume segment especially when such materials find multiple use and economy of scale offers possibilities for cost reduction.**
- 2. Leather-like and almost leather type materials enter the market on account of inelastic nature of supply of raw hides and skins.**
- 3. Environmental demands force changes in the manner and places in which leather is made.**



# LEATHER: UNDER CONSTANT SUBSTITUTION

1. **Leather held a large share of sole materials in footwear during the 1950s. Now it is reduced to <5% share of volume.**
2. **Leather held a large share upper materials in footwear during the 1970s. Now it is reduced to <50% share. May be it will go down further to < 25% share prior to 2030.**

**Substitutes are replacing leather in low value & high volume segment because technological alternatives to leather are continuously evolving.**

# **AN ANALYSIS: SECTORS BASED ON NATURAL ENDOWMENTS**

- 1. Tradition bound sectors like meat, sugar and leather have been undergoing steady changes in technology space and trade value with negligible alterations in volume on account of their dependence on natural endowments.**
- 2. Meat relies on hides and skins as coproducts for deriving its viability. Does Leather stabilise?**
- 3. Sugar industry relies on recovering value from bagasse and other materials as co-products. Bio-refinery is becoming next step forward**
- 4. Has leather developed its strong co-product sector for its own viability so far? Does it depend on value increase in the market place offering space for technological alternatives to flourish?**

# BEHAVIOUR LEATHER SECTOR

- 1. As a traditional industry leather sector has been adapting to technological changes around and embracing some technologies from other related industries as a coping up mechanism.**
- 2. Has leather sector braved the technology world and altered the course of other industries or other products segment so far?**
  - Is there a breakthrough innovation from the leather sector which has altered
    - Either the course of other industries or Developed co-products which altered dramatically its viability by developing a down stream co-industry?

# **GENOMICS OF TECHNOLOGIES OF NATURAL ENDOWMENTS BASED INDUSTRIES**

- 1. Industries based on natural endowments like mining, oil, animal etc. tend to maximize the return on the raw materials by adjusting the product price and minimizing the cost of recovery for its viability**
- 2. Down stream processing is focused on its own value chain and use as much of natural endowments as presented as possible. They do not undertake a wholesome analysis of opportunities for value recovery from the entire endowment and be contended with possible returns by adjusting the market price. Do they live with waste generation??**
- 3. Braving new technology world is not genetically coded into the sectors based on natural endowments**

**A QUESTION OF VALUE**

**IS LEATHER  
PREPARED FOR  
BRAVING NEW  
TECHNOLOGY  
WORLD?**

# **SOME FUNDAMENTAL PARADIGMS: BRAVING NEW WORLD**

- 1. Has the leather sector maximized atom/energy efficiencies?**
- 2. Has the sector worked out its carbon foot print and worked out a net environmental costs of leather sector on the planet?**
  - Both costs of doing and not-doing
- 3. Has leather sector developed co-product industries for its own overall environmental and cost viability?**

# A STEP IN BRAVING NEW TECHNOLOGY ORDER

**COULD LEATHER  
SECTOR GAIN VALUE  
FROM ALL MATRIX  
COMPONENTS OF  
SKIN/HIDE?**

# **MATERIALS USED IN LEATHER SECTOR**

- 1. Raw hides and skins: Hair; Flesh; Trimmings; Salt; Leather making matrix; Fat, glycoproteins, pigments, elastin and other connective tissues and minor matrix components**
- 2. Leather: skin matrix, buffing dust, shaving, trimmings, splits, chromium shavings, sludge, surface coating materials,**
- 3. Footwear and products: Finished leather, adhesives, thread, surface coating materials, polishes, waxes, cuttings etc.**



material	Carbon content (%)	Amount of carbon per Kg of hide in gram	Return on carbon / gram in Rs.	Funds spent in managing wastes	Net return per kg of hide in Rs
Hair					
Fleshing					
Trimmings					
Fat					
Minor matrix components					
a.					
b.					

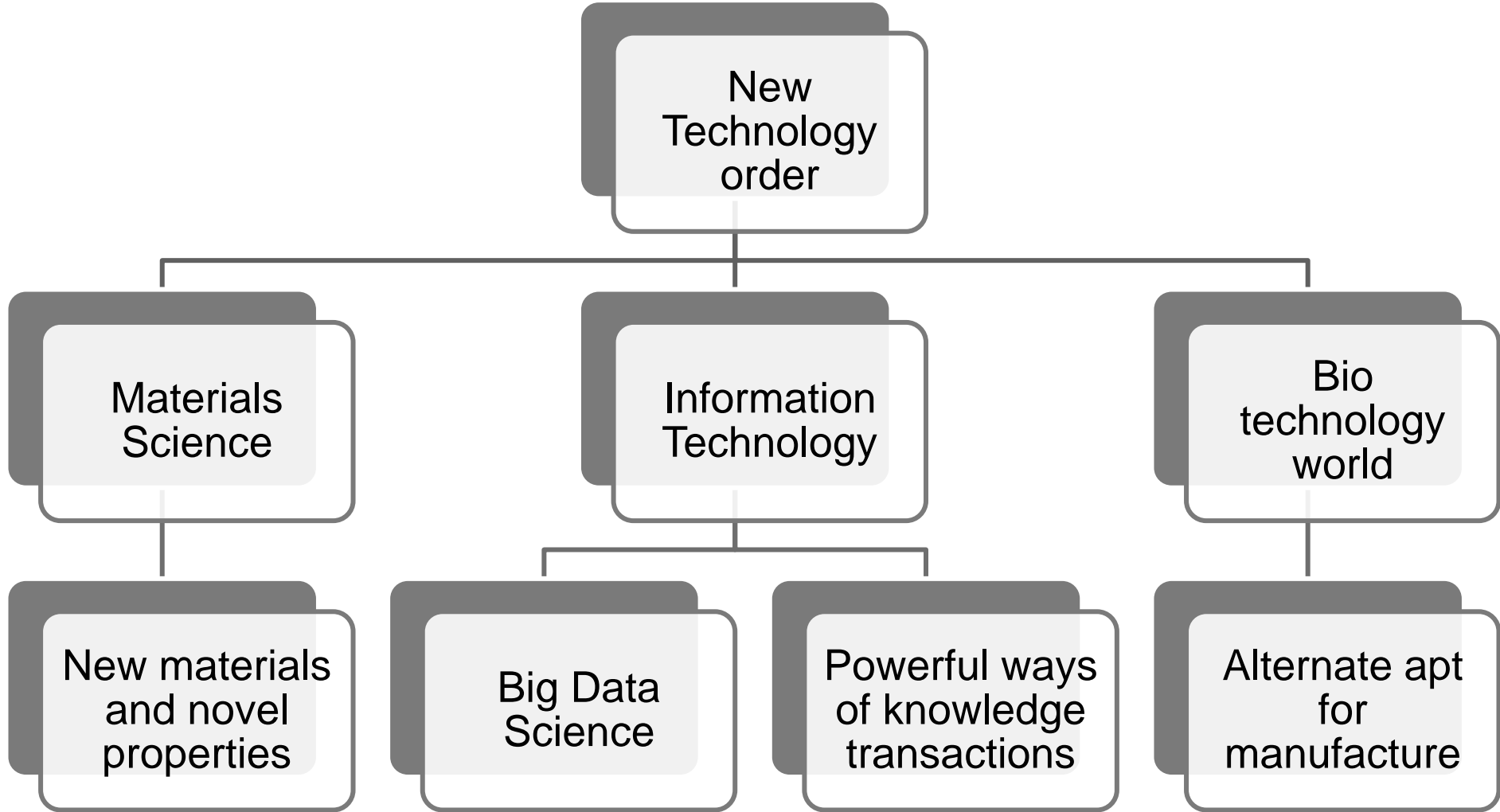
## DESIGN CARBON BALANCE SHEET OF SKIN/HIDE

Material	Carbon content (%)	Amount of carbon per Kg of hide in gram	Return on carbon / gram in Rs.	Funds spent in managing wastes	Net return per kg of hide in Rs
Finished leather					
Buffing dust					
Shavings					
Trimmings					
Splits.					
Sludge					
Surface coating materials					
others					

## DESIGN CARBON BALANCE SHEET FINISHED LEATHER

Material	Carbon content (%)	Amount of carbon per Kg of hide in gram	Return on carbon / gram in Rs.	Funds spent in managing wastes	Net return per kg of hide in Rs
Finished leather					
Lining materials					
Non woven materials					
Finishes					
Minor components					
a.					
b.					

## DESIGN CARBON BALANCE SHEET OF FOOTWEAR/ PRODUCTS



## **WOULD LEATHER SECTOR NEED TO MAKE ADJUSTMENTS WITH CHANGING WORLD TECHNOLOGY ORDER**

**A Question of Value to Designers of technology for leather**

# **SOME NEW TECHNOLOGY PARADIGMS**

**COULD LEATHER  
PRODUCTS EMBRACE  
*“SMARTNESS”* ?**

# LEATHER IN NEW MATERIAL WORLD

Materials science is changing rapidly. Nano pore materials elicit new properties. Smart materials which are capable of sensing surroundings and changing shape and other functional behaviour intelligently are gaining high importance.

- ❑ Leather is a natural material with elaborate woven and pore structure. It could elicit smartness related properties better than many made materials.
  - ❑ Is Smart leather for newer use feasible?
  - ❑ Is commercial smart shoe a technical reality?

# MEASUREMENT OF NEW AND NOVEL PROPERTIES

Leather sector has exploited the utility of leather as a luggage and covering material. The use of leather as a material for aesthetic and functional properties could face soon a return-maximum. User perception of value for leather can not increase ceaselessly. Are there unexplored properties of leather for novel and unknown applications?

- ✓ **Sensors, Smart materials, Radiation and shock absorbers, force dissipation, piezo electric function, directed frictional effects etc.**
- ✓ **Measurement of un-elicited properties of leather is an unknown and unexplored zone of consideration. Could leather offer a new technology application?**

# LEATHER IN NEW BIOTECHNOLOGY WORLD

Biotechnology is making heavy in roads into real world. Leather as processed biological materials could gain significantly from the foray of applications of biotechnology. Have we maximized the potential of biotechnology applications in safe recovery of

- high value co-products (hydroxy amino acids, imino acids, biomarker peptides, glyco proteins and ohe protein conjugates etc.)
- value from used leather products (recycling pathway for improving carbon foot print)
- Chromium and other inorganics



# **COSTS OF LEATHER SECTOR**

**Would not remain limited to those of only the direct costs of conversion incurred by the manufacturer.**

- ❑ It would soon be computed over the environmental costs and contributions to climate change incurred by the society. Total Life Cycle Analysis would reveal different costs incurred by other segments of the society. It is pragmatic for the manufacturer to incur the costs and share it with the consumer.

Atom and Energy efficiency should be worked out and technologies adapted to high efficiencies for braving new world order

# CLOSING REMARKS

- 1. Global leather sector seems to have adopted a safe technology path and treaded paved paths as other sectors based on naturally endowed materials. Is there a business scope that remains unaddressed by technology?**
- 2. Question ahead to all of us in the technology fraternity is “whether conditioning of mind set has prevailed over by the traditions of leather sector”?**
- 3. Is braving new technology world is a tall task for the sector?**
- 4. Are Technology Professionals ready for braving the New Technology world for leather sector!!**

# SUMMARY

## Ladies and Gentlemen

**I have now a mental position outside the leather sector. I have not known the dimensions of change during the last eight years. I have only a ring side view now. Seeing things from outside could give a perspective different from those who dig deep and remain over-awed by the challenges of the day.**

**I tried to avoid this responsibility because I was diffident of my knowledge of leather and yet I braved to see things in a different light. I request some of you to examine the value and discard if thoughts had been examined before, but examine.**

**LADIES AND GENTLEMEN**

***THERE IS A VALUE FOR A RING  
SIDE VIEW IN LIFE. THINK OVER.  
THERE MAY BE SOME HIDDEN  
TREASURE***

**THANK YOU**