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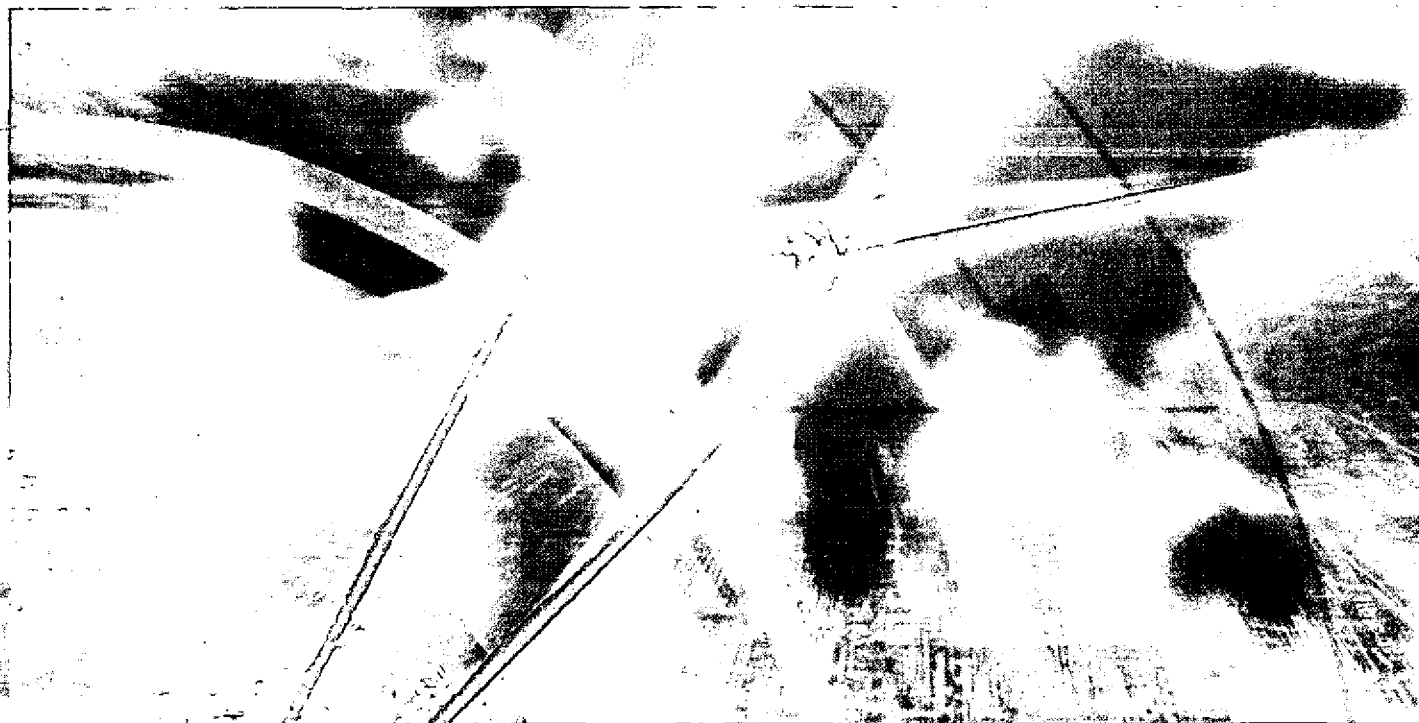
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Industrial Promotion and Technology Branch  
TECHNOLOGY PAPER SERIES 6/05



# Technology Transfer and Trade:

The Toy Industry in India



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION

INDUSTRIAL PROMOTION AND TECHNOLOGY BRANCH

# Technology Transfer and Trade: The Toy Industry in India

TECHNOLOGY PAPER SERIES  
TPS 6/05

December 2005



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**Technology Transfer and Trade: The Toy Industry in India**

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## **Introduction to the UNIDO Industrial Promotion and Technology Branch**

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The UNIDO Industrial Promotion and Technology Branch Technology Paper Series (TPS) provides a means for: stimulating policy thinking; improving policy orientation among policy makers; assisting in the management of science and technology policy craft in industrialisation; and disseminating current thinking on technology, and its industrial dynamics, in broad relation to the economic development. Attention is paid to developing countries (DCs) and transition economies (TEs). The predominant orientation of TPS will be Science and Technology (S&T) policy, policy management, co-ordination dynamics of knowledge-based and public-private partnerships in relation to the role of technology in the industrialisation strategies of DCs and TEs.

The effective, and efficient, management of the policy and structural dimensions of technology, broadly encapsulating trends in innovation, R&D and science is increasingly viewed as crucial to economic development. The systemic aspects of national technology management in terms of incentives, institutional generation of knowledge and flows of technology (and investment) present policy challenges to DCs and TEs.

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The editorial board of TPS will welcome working papers, and work in progress, on aspects of technological development in DCs and TEs. The expectation is that submissions will focus on technology policy – craft, analysis, formulation and implementation – in relation to economic development manifest as higher levels of technology intensity in manufacturing industry. TPS will be published electronically on the UNIDO website as well as in hard copy form.

# Technology Transfer and Trade: The Toy Industry in India

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## Toy Industry in India

### I. INTRODUCTION

The toy industry, mainly concentrated in and around the metropolitan cities of New Delhi and Mumbai in India, is characterized by small-scale establishments. Of late, the toy industry has been internationalized. The application of new materials and technologies have added value to the variety of the toys. Today, the use of toys is unlimited. They are used for decorations by adults and for education & play by children. Toys are also being used for entertainment and child development.

Plastic toys, along with soft toys (mainly dolls) and board games, make up about 80% of the Indian market in value terms. The change that is discernible is the decline in importance of board games (other than puzzles), which involve play by a group of children. Those in the trade argue that, with smaller family size today and the growing incidence of both parents working, there is little scope for board games, which families used to traditionally play together. The emphasis these days is much more on toys, with which a child can play on his/her own.

### Market Dynamics of the Indian Toy Trade

The Indian toy market exhibits some of the characteristics common to any toy market while others have uniquely the Indian character. Individual toys have a short life cycle. There is a constant need for novelty. Consumer tastes change rapidly. Resurrection of old toys does not work – a new content has to be added or altered. These rules, in general, apply to most toy markets internationally. In addition, the Indian market has its own angularities.

Toy sales in India have well defined seasonal patterns coinciding with the festival season. Generally, the time period from July to November is the high season with



temporary surges in some States in December & March. Toy selling in India often involves selling to 3 individuals simultaneously, namely the child, who will use the toy, the mother, who is concerned with safety, space to play, etc. and the father who controls the purse strings. The market is also highly price sensitive. This trend has been reinforced by the entry of large-scale imports of cheap and novel toys from China. These have mostly been unbranded, of low priced and indifferent quality toys.

The Indian toy market is presently characterized by limited product innovation and insignificant expenditure on advertising or brand building. The advertising expenditure is restricted to big toy manufacturers like the Mattel, Funskool & Lego. Even in their cases, this is minimal in India. Knock offs are commonly seen. Indeed some of the most successful toys in India in the recent past, such as toy mobile phones and puppy savings bank, have been knocked off as well.

The fact that many of the Indian toy companies had started as workshops or small factories without sufficient training in the latest management techniques had left them without basic strategic thinking. Today, with the lowering of tariff barriers, the market is open and these industries are facing the challenge of ensuring their competitiveness in a sector where both distributors and multinational competitors play a major role. Yet another challenge is the availability of cheaper products from the South-East Asian countries.

Thus, the industries of the sector have to adapt new strategy and best management practices, which would enable them to survive and compete in this new situation. Products made by SSI manufacturers often suffer from a poor quality perception. This is accentuated by shoddy packaging, poor finishing and the complete absence of brand building. The pessimism about the industry had been fairly widespread and the situation is improving with the concerted efforts by few toy manufacturers only.

The toy industry, being labour intensive, is largely suited to populous economies like India. China, the Taiwan Province of China, the Republic of Korea & some other countries have made a strong international presence by properly developing their local toy industries as per needs of international standards. Success of the toy industry in these countries is not only because of the proper organization of the industry but also due to their ability to supply products as required by the fashion of the conscious US/European consumers.

With the entry of global brands along with the availability of low priced Chinese inputs, the toy industry in India has undergone major changes. After removal of Quantitative Restrictions, the import of toys has jumped from around US\$ 7.0 million to US\$ 31.0 million in 2000-2001. Realizing its potential, the time is ripe to put the Indian toy industry on the world map. In 2003, the estimated global market of toys was around US\$ 85 billion and the Indian toys can have a major share of the world market provided they are based on the latest technologies and are properly marketed for effective competing in the emerging global market.

The past decade has seen the Indian toy industry making quick strides in terms of production and exports. At present, India produces a wide range of toys, namely plastic and mechanical activity toys, plastic and soft dolls, stuffed toys, board games, puzzles, educational games and toys, metal toys, electronic toys and games. It is estimated that the toy production in India is around INR 5.50 billion in the organized sector and INR 12.50 billion in the unorganized sector with nearly 20% annual average growth rate. There are more than 3000 units in the small-scale sector including large number of units in the cottage sector. Some large/MNCs' toy units like the Mattel, Lego and Funskool are also present in India. With international quality toys available in India now, the average spending on toys has increased substantially and this process is supported by an increase in disposable income at the customer end.

## II. CHALLENGES

The factors, which hampered the development and growth of the toy sector in India, can be summarized as below:

- Fixed mind set to cater only to the domestic market.
- Lack of awareness on international opportunities.
- Slow response to the threat of imports.
- Non-availability of institutional facilities for product design and processes of international standards.
- Factors like technology, marketing, training, finances, raw materials not well provided.
- Other factors like distribution channels, market intelligence for product design, tool rooms, pedagogy studies, value of money, mechanization of the processes, introduction of electronics and IT in the product design, have been generally lacking.
- Inadequate attention on issues like child safety, material toxicity, use of new materials and technologies.
- Higher cost of production due to low volumes of production.
- Lack of professionalism.

Taking the above-mentioned into account and the need to bring the Indian toy industry at par with its international counterparts, a long-term national programme was developed through the structured assessment of the Indian toy industry. It was formulated with the aim to meet the requirements of the international market through proper technical support of and cooperation with international organizations and agencies. There was a need in a programme that would:

- Involve intensive exchange of technology, development of skills and experts.
- Create common facilities that would enable the industry to meet the international standards.
- Tie the low cost financial schemes with concrete targets and activities of such a programme in order to meet the demand of the industry.

These issues are critical for cost-effective production of consistent quality toys through use of improved manufacturing and management processes and adoption of higher level of technology and innovative product designs. The toy industry and the government have recognized the export and employment potential of this sector and are undertaking joint efforts towards enhancing productivity and profitability of this sector in India.

### **III. FACTS ABOUT INDIAN TOY MANUFACTURING INDUSTRY**

The scenario of the toy industry has changed after the advent of globalization and liberalization in India taken place in early nineties. With the melting of international trade boundaries, free flow of Chinese toys accessed the Indian market, thus creating dual impact on the local toy industry.

On one hand, the impact has been quite negative because the imported toys were cheaper in cost, versatile in features, attractive and handy in packaging and better in quality. The Indian consumer started liking the imported toys and the Indian industry was in a very bad shape. Some of the promising toy manufacturers sourced out some components and started meeting cost challenges of the Chinese toys. Out of odd 3000 units, some units, which could not keep the pace, have weeded out. On the other hand, the comparatively organized SMEs have transformed themselves into competitive units and are taking the Chinese challenge head on and are even exporting their toys now.

In addition, the Indian toy manufacturing industry can be characterized by the following features:

- For the Indian toy industry, it takes much longer time to launch a new toy. Typically, the profits are much higher during the initial period of toy product life cycle.
- Indian toy industry is generally proprietary in nature with very less professional inputs.
- India has a definite edge in stuffed toys, board games and educational toys. Indian toy industry is not only supplying these toys to Indian markets but it is exporting also.
- Only a few toy manufacturers in India are producing electronic toys and video games.
- Although the focus on quality and safety is visible in Indian toy industry, the gap in quality and price is still significant.
- Most of the Indian toy manufactures are still to procure CE certification and other accreditations, which are a mandatory requirement for exports, etc.
- Indian toy industry is now slowly progressing towards regime of economy of scale, but still much is to be done.
- Most of Indian toy manufacturers have now understood need of design & tool room facilities and few of them are now investing considerable capital for these important inputs.
- Innovations are not happening as fast as it should.
- Indian toy industry has to invest and increase its scale of production for enhanced exports.

- There is negligible availability of consultants for the toy industry and the procedure of hiring them is also not common.
- Inadequate institutional back up while the available facilities are underutilized.
- The toy market is growing, export of toys is growing but along with growing import of toys.

#### **IV. WORLD TRADE ORGANIZATION SCENARIO**

The introduction of WTO regime has necessitated extensive changes in the approach of the Indian toy industry to its further development. As a result, the sector has been affected in some of its operations, as follows:

- Strict Intellectual Property Rights means the end of the “Reverse Engineering” and SMEs will have to develop their own products.
- Conformance to international standards requires system certification (like ISO) and product and safety certification (such as IS 9873, CE, EN 71, etc.).
- Enforcement of environment protection measures will require better working environment, pollution monitoring and control equipment.
- Enforcement of labour laws and new work culture will mean SMEs will need to improve their management styles.
- Dilution of the role of state enterprises supporting SSI sector (NSIC, SIDBI, SISI, etc.) and inability of the Government to intervene in international trade mean individual companies have to stand on their own feet.
- Early awareness about WTO and its impact on SMEs’ operations is necessary, may be through different awareness programmes.

- Permanent monitoring mechanism is to be created, may be within the Secretariat of the Toy Association of India (TAI), to analyze the impact of the above-mentioned provisions of WTO on a regular basis and results circulated among all member companies.
- There is a need in anti-dumping laws framed and implemented in India. But not much progress is reported for toy sector by now.

These challenges need to be addressed comprehensively by the Indian toy industry for remaining competitive at the market. Sustainability is the key word.

## V. GOVERNMENT POLICIES FOR DEVELOPMENT OF TOY INDUSTRY

Almost the entire toy industry is made up of Small & Medium Enterprises (SMEs) or Small Scale Industries (SSIs), as they are better known in India. Till 2001, the manufacturing of toys was permitted to be carried out by SSIs only. Non-SSI units could have manufactured toys only under specified conditions. This stipulation called “reservation for production by SSIs” was removed for toy manufacture in 2001.

The key elements of the Government policy regulating the operation of the toy sector of industry are:

- **De-licensed Environment:** The toy industry is completely free from any controls.
- **Export Related Incentives:** They enable enterprises to get inputs for production at international prices for competing in export market. Special facilities, such as duty free import of capital goods, raw material and components, etc., are offered to export oriented units (EOUs).

- **Institutional Backup:** Toy Design and Development Institute (TDDI) is being set up at Greater Noida. Common facilities for toy testing & toy design have been established in the Delhi & Mumbai regions. However, at present there is no dedicated institutional back up for the toy industry in India.
- **Introduction of VAT:** With introduction of VAT from 01/04/2005, a large part of multiplicity of tax problem may be solved making cross-border trade within India without hassles and without excessive tax burden. But different rates of VAT in different Indian states are still a problem.
- **Patent Regulations:** A comprehensive Bill “The Indian Patents Act” has been promulgated fully conforming with requirements under TRIPS of WTO.
- **Capital Investment Subsidy:** 15% capital investment subsidy is now available for procurement of better machines, equipment, etc. for modernization of the toy units to offset the adverse the affect of high capital cost to some extent.
- **Excise (Production) Tax:** There is no excise tax on production of toys in India.

### **Benefits Of Having Manufacturing Unit In Toy City**

It would thus be seen that the overall policy environment in India is very conducive for the toy industry. The toy enterprises can manufacture and market their products in the domestic and export markets without any constraints.

## **VI. STATUS OF TOY INDUSTRY IN INDIA**

The toy market in India is not a well-organized or documented market. Consequently, the estimates of size vary widely. A study for International Council for Toy Industry (ICTI) in 2003 had estimated the size of the Indian toy market to be over US\$ 1.1 billion (INR 50 billion). This is probably an over-estimate. In the year 2000, the



Mattel had estimated the size of the market to be about INR 4.5 billion, while the Funskool, the Indian joint venture of the Hasbro, had estimated the size at INR 5 billion in 2002. A more precise estimate is available from the principal toy associations namely the Toy Association of India (TAI) and the All India Toy Manufacturers Association (TAITMA). TAI estimates that the toy market in India is about INR 20 billion at current (2004-05) prices. TAITMA, which has a stronger focus in the western region of India, including Mumbai, also estimates the size of the market at the retail level to be about INR 20 billion.

As per estimates, there are more than 3000 toy makers in the country. These are a heterogeneous group - from the very small to large multinationals with an Indian presence. More than half of these toy makers do business of less than INR 1 million in a year. Indeed, many of them are not even exclusively toy makers - they run machines which are demand driven - the machine can make plastic toys as well as other plastic items like cups, plates, buckets, etc., depending on market demand and seasonal patterns.

TAI itself has a membership of over 700 units, of which about 400 are toy manufacturers in their own right. TAITMA has a significant presence across the country too, but the bulk of its members are from the Western India. Almost the entire industry is made up of the Small & Medium Enterprises (SMEs) or Small Scale Industries (SSIs), as they are better known in India. Indeed, till 2001, the manufacture of toys was permitted to be carried out only by SSIs. There is no restriction on the manufacturing toys now. The large toy companies, which have a presence in India today, are the Mattel Toys, Hasbro (through Funskool) and Lego (distribution only) through the Mahindra Intertrade, a company set up by one of the country's largest business houses. The SSI units are primarily clustered in and around Delhi and Mumbai. Kolkata is a distant third, though an exclusively for toys industrial estate is now being set up there.

The Indian toy market does not exhibit a one to one correspondence with the internationally accepted categories. For instance, video games, which constitute the single largest category internationally, are generally not manufactured in India. Toys manufactured by Indian toy manufacturers can be broadly classified into following categories:

- Plastic Toys include Mechanical & Activity toys.
- Plastic & Soft Dolls.
- Plush/Stuffed Toys.
- Board Games/Puzzles.
- Educational Games & Toys.
- Wooden Toys.
- Metal/ Tin Toys.
- Electronic Toys/Games.
- Collectibles and Stationary items converted into playthings.

### **TOY EXPORTS FROM INDIA**

INR millions

HS Code	Commodity	2000-01	2001-02	2002-03	2003-04	2004-05
9501	Wheeled toys ridden by children; dolls carriages/ strollers tricycles, scooters, pedal cars.	3.30	1.20	11.50	11.50	23.80
9502	Dolls, representing only human beings, & parts, etc.	79.40	71.40	74.00	73.70	159.00

9503	Other toys; scale models; puzzles; parts & accessories electric trains, building blocks, tea sets, kites, balls, balloons.	248.00	291.50	251.5	238.40	309.70
9504	Articles for arcade, table or parlor games, bowling alley equipment; parts & accessories pinball, bagatelle, billiards, casino tables, cards, video games, chess, checkers, dominoes.	127.40	232.00	151.9	170.80	208.10
	Total	458.10	596.10	488.9	494.40	700.60

Source: 2004-2005 report of Director General Foreign Trade, Govt. of India

Growth in exports from 2003-04 to 2004-05 = 41.7%

### TOY IMPORTS INTO INDIA

INR millions

HS Code	Commodity	2000-01	2001-02	2002-03	2003-04	2004-05
9501	Wheeled toys ridden by children; dolls carriages/ strollers tricycles, scooters, pedal cars.	24.3	18.0	20.1	31.9	41.7
9502	Dolls, representing only human beings, & parts.	30.8	49.0	69.9	44.2	56.9

9503	Other toys; scale models; puzzles; parts & accessories electric trains, building blocks, tea sets, kites, balls, balloons.	800.0	774.4	721.7	922.6	1203.1
9504	Articles for arcade, table or parlor games, bowling alley equipment; parts & accessories pinball, bagatelle, billiards, casino tables, cards, video games, chess, checkers, dominoes.	281.8	264.0	182.6	170.7	183.9
	<b>Total</b>	<b>1136.9</b>	<b>1105.4</b>	<b>994.3</b>	<b>1168.4</b>	<b>1485.6</b>

*Source: 2004-2005 report of Director General Foreign Trade, Govt. of India*

This does not include the large quantities of toys, reported to be imported through unofficial channels.

## **VII. INDIAN TOY INDUSTRY – “SWOT ANALYSIS”**

A concerted effort was made by the Indian toy industry, the Government and other concerned agencies to evaluate the capabilities of the Indian industry for evolving measures to address the emerging challenges.

### **Strengths**

1. Availability of skilled manpower.
2. Innovation skills.
3. Availability of a large pool of low cost labour.
4. Less overheads.
5. Availability of basic raw materials.
6. Wide range of products to choose.

7. Business acumen.
8. Well-established demand for toys.
9. Manufacturing industry network & linkages.
10. Pool of support institutions.
11. Capacity to compete under adverse scenario.

### **Weaknesses**

1. Low volume production.
2. Fragmented technical knowledge.
3. Absence of strong and professionally managed Trade Associations.
4. Lack of synergy and coordination amongst various toy manufacturers – critical for component approach.
5. Poor process capability because of low technology, inferior tooling and use of general-purpose machines for specialized jobs.
6. Absence of focus on export.
7. Lack of vision:
  - a. Technical capabilities.
  - b. Quality parameters.
  - c. Surface finish and other features.
8. Higher production cost due to lack of scale of production.
9. Poor Image.
10. Lack of range/poor presentation.
11. Insufficient vendor support.
12. Comparatively higher cost of funds.
13. Costly special purpose machines.
14. Lack of pride in workmanship, lack of innovation.

15. Insensitivity to customer needs/poor channels of customer feed back and customer complaint redressal system.
16. Minimal expenditure on brand building, advertising.
17. Very high cost of foreign technologies.
18. Lack of professional management.
19. Reluctance to introduce new product designs.

### **Opportunities**

1. Well developed market – domestic as well as overseas.
2. Growing domestic market and buying capacity of users.
3. Liberalized economy, “Make or Buy” decisions easier.
4. Low cost manufacturing base enabling strategic alliances.
5. Better support from government.

### **Threats**

1. Competition from international players manufacturing in India.
2. China and other countries ready to corner major market share in the growing toy markets.
3. Technology obsolescence, including rapid changes in product design and consumer preferences.
4. Slow response to safety and quality requirements of international market.
5. Toy units diversifying to other sectors leading to poor component base.
6. Shift of trends to electronics toys in which India does not hold a good position.
7. Enhanced brand consciousness (of MNC products) amongst Indian consumers.

The SWOT analysis establishes some conditions for a toy unit to be successful in the present competitive scenario. The successful toy unit has to invest heavily in technology, marketing, design, brand building, etc. to archive economy of scale for

supplying safe and conforming toys to the Indian and overseas markets. There is a lot of untapped potential.

## VIII. TECHNOLOGIES REQUIRED FOR COMPETITIVE TOY INDUSTRY

- Design and development.
- Plastic processing technologies.
- Tools and moulds design and fabrication (for plastic, metals, etc.).
- Packaging technologies.
- Stickers, adhesive making technologies.
- Sheet metal technology.
- Fabric processing, stitching and stuffing technologies (including pattern making, cutting).
- Wood working technologies.
- Non ferrous metals (like clay processing, etc.).
- Painting, metalising and other surface treatment processes.
- PCB designing and production.
- Soldering and assembling of electronic components.
- CAD/CAM.
- Rapid prototyping.
- Mechatronics.
- Pedagogy studies.

Important steps for a toy unit to focus on innovation and its commercialization for enhanced competitive strengths

- Focus on selected product line and become the world's leading expert in your invention and products that can be derived from that invention.
- Have the willingness to develop a range of products. It is very important.
- Reduce product development duration with specialization.
- It is hard to get and retain shelf space at retail with a one product, "product range". Before licensees take on a new product, they usually want to know that, there are follow-up products in the development "pipeline". Without that, the retailers know that they would be spending big money to publicize the new product, so that others can step in with extension products that will obsolete their marketing and tooling investment. Not too attractive for the licensee.
- Build a Team, broaden your capabilities by teaming up with other people with complementary talents.
- Know the customer's needs very well. Learn your licensee's needs.
- Conceptualize winning designs.
- Look for new design products that meet the needs of the customers.

#### **IX. UNIDO NATIONAL PROGRAMME FOR DEVELOPMENT OF TOY INDUSTRY (NPDTI)**

To enable the Indian toy industry in technological upgrading for becoming globally competitive, UNIDO and the Ministry of Small-Scale Industries, Government of India initiated in September 2000 a National Programme for Development of Indian Toy Industry (NPDTI). The main aim of the programme was to facilitate market support to the toy industry and build its design and development capacity.



1. **Development Objective**

To strengthen the competitive position of the Indian toy industry and increase its share in the world market by enhancing the *manufacturing capacity and strengthening the sector's technological and market development capability.*

2. **Immediate Objectives**

- To set up a Common Facility Centre in the Greater Noida Toy City.
- To develop and implement a SME Entrepreneurship Development programme.
- To develop and implement a *training programme on product design.*
- To promote the “Made in India” toys Brand in the world market.
- To formulate and implement a national strategy to enhance and maintain Indian exports basket.

3. **Project Deliverables**

- *Setting up of a Common Facility Centre in Greater Noida Toy City, thus providing facilities to industry, which include testing, calibration, reference facilities, training, design & development, packaging, CAD/CAM, rapid prototyping, etc.*
- 25 to 30 select Indian toy units upgraded to international standards.
- *Toys becoming as a major contributor to the export basket of India.*
- Finance and credit windows developed for the Indian toy sector.
- Technology development for the Indian toy industry.
- Dedicated website on Indian toys also providing technical information.
- *Strong linkages between the Indian and international toy makers' communities.*
- Market place and brand image for “Made in India” toys.
- Channels/mechanisms for raw materials, experts, training institutions and market intelligence.

- Use of UNIDO expertise and resources for key issues like negotiating technology transfer for the benefit of Indian toys industry.
- Empowerment of women and weaker section of society with skills for producing better toys and improving the productivity.
- Capacity building of Toy Centre for replicating such activities in other places.

## X. AVENUES FOR TECHNOLOGY TRANSFER

The major avenues for accessing technology in the toy sector, in India; include the following:

1. **Foreign collaboration** – The individual toy manufacturers can tie up with a counterpart in a developed country for production of selected range of toys including buy back arrangements. It includes technical assistance covering product design, production processes etc., from the foreign collaborators. Such arrangements will be a win-win situation for Indian as well as foreign companies. Strategic alliance is feasible with leading toy manufacturers like Mattel, Lego, Zapf, Disney, Warner Bros, Bandai, Takara, Sony, Microsoft, Nintendo, Sega etc.
2. **Licensing arrangements** – Licensing arrangement with some leading toy manufacturers of the world for production of specified toys as per their designs and standards can also be another source of technology transfer to Indian toy industry. The availability of ready markets (in India and overseas) and economic manufacturing base could be helpful in this direction.
3. **Foreign Direct Investment (FDI)** – This is a most preferred option for development of the toy industry in India. However, due to limited component support and availability of skills in mechanized production of toys, not many cases of FDI from overseas companies into the toy sector in India have been

seen. A few demonstrative examples can only boost the process of FDI in toy sector.

4. **Outsourcing of production by developed countries** – Manufacturing of less value addition toys like traditional plastic and sheet metal toys is becoming unviable and unattractive for developed countries. As a result, some large manufactures in these countries are always looking for outsourcing procurement of components or transferring their manufacturing base in other countries. Large companies also provide technical support for outsourced components. This can be useful commercial preposition for Indian toy companies in getting business as well as in building technological capacity.

## XI. **AVENUES FOR TECHNOLOGY TRADE**

In business-to-business transactions, a toy company has added value to the customer's business if it is successful in giving its customers more benefits than cost. The greater the value is the higher the gross margin of the vendor company will be, either through higher prices or higher sales volumes. A product is bought because the benefits derived from the product or service (*value*) exceed the *cost* connected to the same. Benefits can be of technical, economic, social, environmental or service nature.

The importance of technology has increased dramatically. For meaningful economic development, the four major critical aspects, which get priority attention, are price, quality, speed and new unique products. This, in turn, led to the trend for quality products. The thrust on improving efficiency and reducing production cost necessitate use of scientific managerial practices, including "Just-In-Time" delivery concept. The need to enhance profits, after meeting the challenges of price, quality and delivery, has warranted creating demand for new range and varieties of toys. The shelf life of all kinds

of toys generally has substantially decreased. Thus, the improved versions of existing products provide the necessary backbone for promoting sales. This invariably calls for upgradation of skills for launching new designs of toys, using technology as a tool.

The main drivers for this change, in toys sector in particular, revolve around technology. The technology is now being treated as a product in itself for commercial viability. The relocation of production of toys to low labour cost countries, like China, the Taiwan Province of China and now India, has confronted technology rich industries with an additional problem of protection of their know how based upon in-house research & development. It is widely accepted that direct foreign investments from industrial countries to developing countries, particularly in South East Asia, including India, have created a diffusion of technology into the toy sector for achieving economies of scale. Technology rich industries are however mindful of the fact that the transferred technology may be used to compete against them, thus denying them the opportunity for adequate returns to their investment/technology.

There is thus a tremendous potential for trade & tie up in technology if appropriate provisions for protecting Intellectual Property are in place in a country like India, which has thrived on reserve engineering. Commercial trading in technology will ensure the technology provider with one-time returns, which could prove highly beneficial to the supplier of technology in view of the limited shelf life of each variety of toy. As a result, the toy enterprises in a developing country like India will be able to get the desirable access to R&D departments of the technology rich enterprises.

Globalization and consequent relocation of production have already triggered transport of raw materials, intermediates and finished products. As an example, plastic materials for toys and toy packaging are produced in the Republic of Korea, toys manufactured in China & other South-East Asian countries for a supermarket or a toy store in Europe, the USA and other countries. Interestingly, the intermediates are

generally produced with European plasticizers and solvents, based on Russian crude oil for manufacture of safe and consistent quality toys.

All these linkages between raw material suppliers, technology providers and toy manufacturers have thrown up new vistas for trade in technology for production of toys, if compatibility of trade practices with WTO norms is assured. Such practices will help the technology buyer in getting true value for the investment on one side and also satisfy the technology provider/seller by getting the desirable commercial returns for its R&D effort, on the other side.

### **Trade as a Tool for Technology Transfer**

Availability of commercial, tried & tested, technology in the field of toy production for adoption by toy enterprises in a developing country like India, will help in building confidence amongst the toy enterprises to opt for upgradation. The fear of violating Intellectual Property Rights (IPRs) will be avoided. With the lowering of production cost for toy manufacture in India, the toy companies will also have the advantage of outsourcing toy manufacture to Indian companies for their overall benefit. This commercial benefit will motivate the technology provider in sharing more and more toy designs and toy manufacturing techniques with the toy enterprises in a developing country on long term basis. Toy as a product is based upon the entire gamut of manufacturing practices, ranging from metal forming, metal processing, plastic processing, fashion design, fabric & texture development, tooling etc. The avenues for trade thus are enormous for sourcing of technology by the toy manufacturing enterprises in developing countries.

Obviously, all industries now search for added value in toys, both in the field of technology as well as marketing. For manufacturers in developing countries, the choices

are less obvious. Huge profits upwards in the supply chain -close to consumers and end-users are luring. But adding value in toy manufacture & marketing means substantial investments in time and money, particularly investments in market research, market information, distribution channels, advertising, publicity and/or brand building.

From these perspectives, it is apparent that both parties – industries with technology and contract manufacturers alike – have to opt for the technology route. For contract manufacturers, it is the surest way to produce new toys more frequently and stay away from the downward spiral that affects all production activities. For toy technology rich industries, it could be a solution to the ever-increasing problems around outsourcing and off-shoring. Cost advantage was and is the main driver for outsourcing, but both parties are having second thoughts about the benefits of outsourcing, particularly in manufacturing. Institutional support for developing the right understanding of the technological needs to manufacture a toy in a correct and cost effective way will go a long way in further promoting trade in toy technology. The principle of comparative advantage and gains from trade are the most important results in economics. Transfer of technology through trade can be a remedy against the problems that proliferation of production and trade has brought along. Changes in technology work in a similar way. Technical progress in toy sector will potentially raise profitability.

## **XII. MECHANISM FOR TECHNOLOGY TRANSFER**

For the trade in technology to be successful, the identification & selection of technology for adoption are imperative. For the technology trade model to be successful, documentation of available technologies has to precede the market promotion of technologies. The major areas of technology in the toy manufacture include toy design, product development, product evaluation and good manufacturing practices. These areas

are relevant for the entire range of toy production but are divergent for each group of toys, consisting of plastic toys, metal toys, electronic toys, non-metal toys, soft toys, boards & games, etc. The identification and documentation of the technologies for each group of toys will have to be done separately for cost-effective adoption in the toys sector, which mainly comprise of small enterprises.

The next most critical aspect of technology transfer is the demonstration of benefits of improved technology followed by appropriate exposure and training of technology buyers/receivers. The technology provider will have to support the technology moderation to make the available technology compatible with the needs of small enterprises on commercial basis. Adequate exposure to buyers and sellers of technology (or providers and seekers of technology) about the concerns of each other is absolutely critical for generating confidence level, which will in turn lead to the real transfer of technology on sustainable basis.

### **XIII. IMPACT AND EVALUATION OF UNIDO NATIONAL PROGRAMME FOR DEVELOPMENT OF INDIAN TOY INDUSTRY (NPDTI)**

The impact of policy and programme interventions coupled with initiatives of the industry in the globalization era have helped the industry in achieving the following:

- Toy testing facilities as per national and international standards, created at Regional Testing Centers at New Delhi and Mumbai. This has helped in executing export orders and production of safe toys.
- More than 200 toy designs & concepts developed with the databank of designs is still available for commercial production.
- In-house design capacity building at unit level.

- 356 toy industry personnel trained on various technology, safety, IPR and marketing related aspects.
- Threat of imports is not an issue now. Units are able to compete with China and manufacture selected products more cost-effectively.
- Production of new toys has been launched and capacity to launch new products has been developed.
- More & more units are developing in-house tool development facility.
- Extensive use of CAD/ 3D scanning techniques is applied.
- Specialization in plastic toys and board & games is conforming to international standards.
- Average production growth is of 20% pa.
- Export growth during 2004-05 is 41.7%. Exports have doubled during 1999-2000 to 2004-2005.
- Capital investment in more & more units in the last two years comes for in-house tool rooms, injection moulding and packaging facilities.
- Toy industry is capable of producing safe toys as per European & Indian standard stipulations.
- 8 units are accredited to CE certification for exports to Europe.
- Exposure of progressive toy units on technology upgradation needs has been almost completed with improved tooling & quality in 20 units.
- Better understanding of toy needs is in overseas markets. Few proposals for outsourcing toy manufacture in India by European companies are in pipeline.
- Organized component outsourcing to China is developed to improve competitiveness.



- Common sourcing of dyes and pigments for production of safe toys developed in the Mumbai region.

#### **XIV. CONCLUSIONS**

The Indian toy industry is growing at an average rate of 20% and is now convinced with the fact that it needs to invest in technology, marketing, safety aspects, tooling and brand building, if they want to grow further. European quality at Chinese cost is the formula for growth. This offers new vistas for trade in technology in the toy sector within the WTO understanding for accrual of optimum benefit to technology providers as well as technology seekers. Few units have achieved the scale of economy and succeeded convincingly. But a lot of toy units have been closed also mainly because of their poor cost competitiveness, obsolete designs and unprofessional marketing. Though the toy industry is mainly driven by designs and marketability, technology remains the main stay for converting the designs into viable and marketable products. Outright purchase of technology or licensing arrangements for toy industry does not appear to be viable. The internationally available technologies are very costly and beyond the reach of Indian toy SME.

In present WTO scenario, institutional back up can help solving issues of costly technologies, obsolete designs, market intelligence and better tooling. Method of reverse engineering will not be now available to the toy manufacturing companies. As a result, these companies have to invest in their own design and development activities. Modern prototype development techniques, better tool room facilities would be more useful to the toy units. The industry needs to be sensitized and upgraded regularly on WTO provisions and related opportunities. The toy industry has to develop a culture of innovations and market intelligence.

Setting up big toy units with a number of peripheral smaller toy component units can be a good model for development of Indian toy industry. The smaller component units may feed components to larger companies, as per design & advice of the larger company. The central company can source costly technologies from overseas in the WTO compatible environment. This will lead to a multiple trade in technology wherein the central company seeks technology from a technology provider in the developed country and also provides technology in parts to its vendors / supplier companies.

The existing growth of 20% per annum in the Indian toys sector, which is poised to grow at the rate of 35% or more, will provide the right opportunities for stepping up trade in toy technologies, particularly in the areas of product design, packaging and production processes.

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