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Portfolio

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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Cleaner Concept and our stand!!



International concern has increased over the years on Climate Change. The ten hottest years on record have all occurred since 1998. Out of the last 21 years 18 are among the 20 warmest years since 1880. Data and findings add weight to the common conclusion that the clear long-term trend is one of global warming. Most of the observed increase in global average temperature since the mid - 20th century is very likely due to the observed rise in anthropogenic greenhouse gas concentrations. Among these, particular attention is paid on CO₂ (carbon dioxide). Latest estimates show that global CO₂ emissions increased to 30,600 million ton in 2010. Industry and manufacturing contribute for 19% of all Greenhouse Gas Emissions. Interest has been developed in estimating the total amount of GHG produced during the various stages in the life cycle of products. The outcome of these calculations, are referred to as Product Carbon Footprints (PCFs). Currently, there is no single methodology and no agreement has been reached internationally on Leather PCF calculation methods.

Cleaner production is an efficient method of preventing or minimizing pollution caused by industrial activities. UNIDO continues to place an emphasis on the introduction of cleaner leather processing technology in developing countries.

The primary task of all cleaner technologies is to reduce the amount pollution emissions; and where possible change the nature of pollution emissions to reduce the pressure and costs of end-of-pipe treatment. The expected results primarily include:

- Lower water consumption – better preservation of rapidly diminishing water resources.
- Lower total dissolved solids (TDS) content (including salinity) – lower risk of affecting the usability of the receiving water bodies for irrigation and livestock watering.
- Avoidance of use in processing and/or presence in leather of substances from the Restricted Substances Lists (RSL) promulgated by national or regional legislation, leading (multinational) brands and/or ecolabel due to their proven negative impact on human health and eco-systems.
- Proportionally higher volume of solid wastes suitable for processing into saleable by-products.

- Lower levels of BOD, COD and Nitrogen; their respective contents in conformity with local and widely prevailing legislative norms.
- Low level of chromium in (C)ETP sludge – the scope for land application and/or composting.
- Lower hazardous and/or unpleasant air emissions.
- Appropriate occupational health and safety (OSH) standards – better work conditions, fewer accidents.

Historically, for various reasons, tanneries have been generally found in clusters in many countries. In several countries that still possess a strong tanning industry, the industry has either been able to deal collectively with the environmental challenges by means of common waste treatment facilities in existing clusters or is in the process of relocation. Within almost all projects of tannery relocation there have been common reasons and the main problems faced by the industry at the current location are:

With no infrastructure for treatment of solid or liquid waste generated by tanneries, a very unhygienic atmosphere has been created in the entire locality due to discharge/disposal of untreated solid and liquid wastes. Due to extreme limitations of space, even tanneries wanting to modernize and become more efficient in terms of production and environment management are unable to do so. The present location, in this manner, has become a serious constraint for the growth of the industry. Downstream industries such as footwear, leather garment and leather goods, depend on the tanning industry for supply of quality leather. The existing limitations have put a limit to the growth of leather products industries. Relocation of the tanneries to a more spacious location with appropriate infrastructure for efficient and cost effective treatment of solid and liquid wastes has thus become a prerequisite for survival and growth of the leather industry in such cases.

The precarious situation with water and soil pollution in the area of tannery clusters along the Indian rivers had prompted the state environmental authorities as well as central agencies to press for adherence to TDS discharge limits as well as to impose an approach not practiced in the tanning industry: a Zero Liquid Discharge (ZLD) concept. Essentially, the ZLD systems concentrate



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Editorial

dissolved solids by Reverse Osmosis (RO) and some kind of Multi Effect Evaporation (MEE) until only damp solid waste remains. Solid waste is disposed and nearly all water is reclaimed and reused. Accordingly, some of the existing Common Effluent Treatment Plants (CETPs) have been supplemented by RO and MEE, together with auxiliary steps (tertiary treatment, water softening etc.). Since the energy costs are critical for the viability of the entire concept, data about energy consumption (thermal, electrical main and Diesel) at key stages (RO, multistage evaporation) are consolidated, analysed and correlated. Additional energy needs and costs are compared with those for conventional (CETP) treatment and estimates made of the carbon footprint increase caused by the ZLD operations.

Hydrogen sulphide gas present in tanneries and effluent treatment plants (ETPs) has proven fatal to workers exposed to it many times. It is therefore necessary that the owners and managers of tanneries and effluent treatment plants are fully aware of the dangers posed by this poisonous gas and take all preventive and precautionary measures to protect the workforce from

exposure to this gas. In the event of accidental exposure of a worker, they should know how to deal with the situation. Activities of the environmentalists in the leather processing have as one of its important objectives, improvement of occupational safety and health practices in tanneries and effluent treatment plants. Under this objective, the project has been seeking to demonstrate in selected tanneries improvement practices for better occupational health and safety of the workers.

It is hoped that the industry representatives and other concerned with the occupational health and safety of workers in tanneries and effluent treatment plants will find this publication useful.

Goutam Mukherjee

Dr. Goutam Mukherjee
Hony. Editor, JILTA



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From the Desk of General Secretary



59th Annual General Meeting

As advised vide Notice posted by registered post on 07/11/2017, the 59th AGM was held at the Auditorium of Indian Science Congress Association, 14, Dr. Biresh Guha Street, Kolkata – 700 017 at 03.00 PM on Saturday 30th November, 2017 and business as per Agenda was carried out.

As per agenda item no.4, Mr. Dhiman Chakraborty, Controller of Finance, The Asiatic Society, 1, Park Street, Kolkata – 700 016 who acted as the Returning Officer formally announced the Executive Committee of ILTA at headqtrs. and also the Regional Committees as quoted below :-

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16th Sanjoy Sen Memorial Lecture

This will be organized at Freya Design Studio, ILPA Leather Goods Park, Kolkata Leather Complex, Bantala at 11.00 Hrs (Registration from 10.30 Hrs) on Saturday the 13th January, 2018. Lunch will be served at the conclusion of the programme.

Prof. Amlan Chakraborty, Dean of Technology, University of Calcutta, has kindly consented to deliver the Sanjoy Sen Memorial Lecture titled "Synergistic Approach in Technology Research".

Individual invitation cards with further detail of the programme have been posted on 30.12.2017.

Siliguri LEXPO – XXIV

Formal communication in respect of allocating Kanchanjungha Krirangan adjacent ground at Siliguri to us for organizing LEXPO from 23rd December, 2017 to



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ILTA News

7th January, 2018 was received by us only on 8th December, 2017. Organizing LEXPO at Siliguri with only two weeks' notice was a difficult task. Nevertheless with all out efforts from all concerned, it has been possible to organize the Inaugural Ceremony at 05.00 PM on Friday the 22nd December, 2017.

Details in respect of the inaugural ceremony will be published in the next issue of ILTA.

Seminar at ILF – 2018, Chennai

We have already booked Seminar Hall "A" at ILF 2018 from 10.00 hrs. on 2nd February, 2018 for the Seminar.

We have already received confirmation from Dr. B. Chandrasekaran, Director, CSIR, CLRI, Chennai in respect

of his delivering a lecture at the seminar titled "R&D Progress for the Global Sector". Dr. Ivan Kral, Industrial Development Officer, UNIDO has been approached to be the second speaker.

Padmashri & Padmabhushan Dr. T. Ramasami has been approached to be the Chief Guest on the occasion. This response is awaited.

Dr. T. Sathi Selvam Director (Manufacturing Business) Balmer Lawrie & Co. & Mr. N. Shafeek Ahmed, Chairman, Indian Leather Manufacturers & Exporters Association have been approached to grace the occasion as the Guests of Honour. Their consent is awaited.

BEREAVEMENT

With profound grief and a heavy heart we announce the sad demise of Ramendra Nath Biswas a few weeks back and Sudhir Kr. Das on 14th December, 2017. Both were Life Members of ILTA.

May their souls rest in peace and may God give strength to the members of the bereaved families to bear the irreparable loss.

You are requested to :-

- Kindly inform us your '**E-Mail ID**', '**Mobile No**', '**Land Line No**', through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413429 / 3459 / 7320. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.
- Kindly mention your **Membership No. (If any)** against your each and every communication, so that we can locate you easily in our record.

(Susanta Mallick)
General Secretary

**Executive Committee Members meet every Thursday
at 18-30 hrs. at ILTA Office.**

Members willing to participate are most welcome.







Biogas Technology

Dibyajyoti Tikadar

Govt. College of Engg. & Leather Technology, Kolkata

Abstract

The utilization of microbial activity to treat agricultural, industrial, and domestic wastes has been common practice for a half century. In recent years, biogas systems have attracted considerable attention as a promising approach to decentralized rural development. Developed and developing countries and several international organizations have shown interest in biogas systems with respect to various objectives: a renewable source of energy, bio-fertilizer, waste recycling, rural development, public health and hygiene, pollution control, environmental management, appropriate technology, and technical cooperation. This paper provides an overview of biogas technology and opportunities to use this technology in livestock facilities across the rural area. First, a brief description of biogas technology is provided. Then the benefits of biogas technology are discussed. Finally, the experience and status of biogas technology development in India are described.

Keywords - Biogas, Fermentation, Methane, Rural Energy, Renewable Energy, Environmental greenhouse gases, Electricity, Anaerobic digestion, Manure, organic waste, Pollution

Introduction

Developing-country rural areas have a variety of available biomass materials, including fuel wood, agricultural wastes, and animal wastes. In particular, many countries have large cattle and buffalo herds, whose considerable wastes have much energy potential. Traditionally, these wastes are carefully collected in India and used as fertilizer, except in places where villagers are forced by the scarcity of fuel wood to burn dung-cakes as cooking fuel. Since biogas plants yield sludge fertilizer, the biogas fuel and/or electricity generated is

a valuable additional bonus. It is this bonus output that has motivated the large biogas programmes in a number of developing countries, particularly India

Rural energy planning requires choices among energy technologies. Up to the day, the choices have been confined to centralized energy supply technologies - power plants based on hydroelectricity, coal, oil, or natural gas. The problem is local and global environmental degradation. It has, therefore, become essential to extend the list of technological alternatives for energy decision-making to include decentralized sources of supply.

Biogas

Biogas is actually a mixture of gases, usually carbon dioxide and methane. It is produced by a few kinds of microorganisms, usually when air or oxygen is absent. (The absence of oxygen is called "anaerobic conditions.") Animals that eat a lot of plant material, particularly grazing animals such as cattle, produce large amounts of biogas. The biogas is produced not by the cows themselves, but by billions of microorganisms living in their digestive systems. Biogas also develops in bogs and at the bottom of lakes, where decaying organic matter builds up under wet and anaerobic conditions.

Besides being able to live without oxygen, methane-producing microorganisms have another special feature: They are among the very few creatures that can digest cellulose, the main ingredient of plant fibres. Another special feature of these organisms is that they are very sensitive to conditions in their environment, such as temperature, acidity, the amount of water, etc.

Composition of biogas :-

Methane (50-65%)

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Carbon dioxide (30-40%)

Nitrogen (2-3%)

Water vapour (0.5%)

Methane, which is the main constituent a colourless, odourless, inflammable gas, it has been referred to as sewerage gas, klar gas, marsh gas, refuse-derived fuel (RDF), sludge gas, will-o'-the-wisp of marsh lands, fool's fire, gobar gas (cow dung gas), bioenergy, and "fuel of the future." The gas mixture produced is composed roughly of 65 percent CH₄, 30 percent CO₂, and 1 per cent H₂S. A thousand cubic feet of processed biogas is equivalent to 600 cubic feet of natural gas, 6.4 gallons of butane, 5.2 gallons of gasoline, or 4.6 gallons of diesel oil. For cooking and lighting, a family of four would consume 150 cubic feet of biogas per day, an amount that is easily generated from the family's night soil and the dung of three cows. In addition, rural housewives using the biofuel are spared the irritating smoke resulting from the combustion of firewood; cattle dung cakes, and the detritus of raw vegetables.

Raw material

Forms of biomass listed below may be used along with water.

Animal dung

Poultry wastes

Plant wastes(husk,grass,weeds etc.)

Human excreta

Domestic wastes(vegetable peels,waste food materials)

And some by product of industry.

History of Biogas

People have been using biogas for over 200 years. In the days before electricity, biogas was drawn from the underground sewer pipes in London and burned in street lamps, which were known as "gaslights." In many parts of the world, biogas is used to heat and light homes, to cook, and even to fuel buses. It is collected from large-scale sources such as landfills and pig barns, and through small domestic or community systems in many villages.

The decomposition breaks down the organic matter, releasing various gases. The main gases released are methane, carbon dioxide, hydrogen and hydrogen sulphide. Bacteria carry out the decomposition or fermentation. The conditions for creating biogas have to be anaerobic that is without any air and in the presence of water. The organic waste matter is generally animal or cattle dung, plant wastes, etc. These waste products contain carbohydrates, proteins and fat material that are broken down by bacteria. The waste matter is soaked in water to give the bacteria a proper medium to grow. Absence of air or oxygen is important for decomposition because bacteria then take oxygen from the waste material itself and in the process break them down.

Biogas is a Form of Renewable Energy

Flammable biogas can be collected using a simple tank, as shown here. Animal manure is stored in a closed tank where the gas accumulates. It makes an excellent fuel for cook stoves and furnaces, and can be used in place of regular natural gas, which is a fossil fuel. Biogas is considered to be a source of renewable energy. This is because the production of biogas depends on the supply of grass, which usually grows back each year. By comparison, the natural gas used in most of our homes is not considered a form of renewable energy. Natural gas formed from the fossilized remains of plants and animals-a process that took millions of years. These resources do not "grow back" in a time scale that is meaningful for humans

Biogas generation cycle

There are two types of bio gas plants that are used in India. These plants mainly use cattle dung called "gobar" i.e. cow dung and are hence called gobar gas plant'. Generally a slurry is made from cattle dung and water, which forms the starting material for these plants.

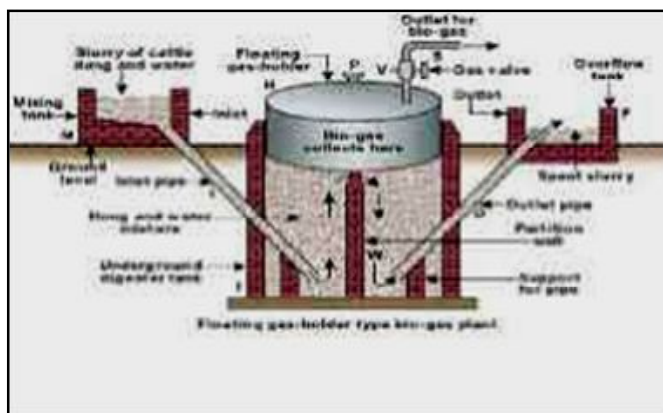
The two types of bio gas plants are :

1. Floating gas-holder type
2. Fixed dome type



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Floating gasholder type of plant: The diagram below shows the details of a floating gasholder type of bio gas plant. A well is made out of concrete. This is called the digester tank T. It is divided into two parts. One side has the inlet, from where slurry is fed to the tank. The tank has a cylindrical dome H made of stainless steel that floats on the slurry and collects the gas generated. Hence the name given to this type of plant is floating gas holder type of bio gas plant. The slurry is made to ferment for about 50 days. As more gas is made by the bacterial fermentation, the pressure inside H increases. The gas can be taken out through outlet pipe V. The decomposed matter expands and overflows into the next chamber in tank T. This is then removed by the outlet pipe to the overflow tank and is used as manure for cultivation purposes.



Advantage of biogas

High caloric value

Clean fuel

No residue produced

No smoke produced

Non polluting

Economical

Can be supplied through pipe

Burns readily-has a convenient ignition temperature

Energy in Biogas

The main problem in the economic evaluation is to allocate a suitable monetary value to the non-commercial fuels, which have so far no market prices. For the majority of rural households biogas is primarily a means of supplying energy for daily cooking and for lighting. They use mainly firewood, dried cow dung and harvest residues as fuel. But even if the particular household does not purchase the required traditional fuel, it's value can be calculated with the help of fuel prices on the local market. Theoretically, the firewood collector of the family could sell the amount that is no longer needed in the household.

As an example, the rural households in India use the following quantities of non-commercial fuel per capita daily:

- firewood: 0.62 kg
- dried cow dung: 0.34 kg
- harvest residues: 0.20 kg

For rural households in the People's Republic of China the daily consumption of firewood is similar: between 0.55 - 0.83 kg per person.

Which sources of energy have been used so far and to what extent they can be replaced must be determined for the economic evaluation of biogas by means of calorific value relations. The monetary benefits of biogas depend mainly on how far commercial fuels can be replaced and their respective price on the market.

1m³ Biogas (approx. 6 kWh/m³) is equivalent to: Diesel, Kerosene (approx. 12 kWh/kg) 0.5 kg Wood (approx. 4.5 kWh/kg) 1.3 kg

Cow dung (approx. 5 kWh/kg dry matter) 1.2 kg Plant residues (approx. 4.5 kWh/kg d.m.) 1.3 kg Hard coal (approx. 8.5 kWh/kg) 0.7 kg

City gas (approx. 5.3 kWh/m³) 1.1 m³ Propane (approx. 25 kWh/m³) 0.24 m³



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The Benefits for Biogas

Individual households judge the profitability of biogas plants primarily from the monetary surplus gained from utilizing biogas and bio-fertilizer in relation to the cost of the plants. The following effects, to be documented and provided with a monetary value, should be listed as benefits: expenditure saved by the substitution of other energy sources with biogas.

If applicable, income from the sale of biogas; expenditure saved by the substitution of mineral fertilizers with bio-fertilizer. Increased yield by using bio-fertilizer. If applicable, income from the sale of bio-fertilizer; savings in the cost of disposal and treatment of substrates (mainly for waste-water treatment); time saved for collecting and preparing previously used fuel materials (if applicable), time saved for work in the stable and for spreading manure (if this time can be used to generate income). Monetizing individual benefits The economic evaluation of the individual benefits of biogas plants is relatively simple if the users cover their energy and fertilizer demands commercially. In general, the monetary benefits from biogas plants for enterprises and institutions as well as from plants for well-to-do households should be quite reliably calculable. These groups normally purchase commercial fuels e.g. oil, gas and coal as well as mineral fertilizers. In industrialized countries, it is common practice to feed surplus electric energy, produced by biogas-driven generators, in the grid. Biogas slurry is a marketable product and the infrastructure allows its transport at reasonable cost. Furthermore, treatment of waste and waste water is strictly regulated by law, causing communes, companies and farmers expenses which, if reduced with the help of biogas technology, are directly calculable benefits. In contrast, small farmers in developing countries collect and use mostly traditional fuels and fertilizers like wood, harvest residues and cow dung. No direct monetary savings can be attributed to the use of biogas and bio-fertilizer. The monetary value of biogas has to be calculated through the time saved for collecting fuel, the monetary value for bio-fertilizer through the expected increase in crop yields. Both in theory and in practice, this is problematic. In practice, a farmer would not value

time for fuel collection very highly as it is often done by children or by somebody with low or no opportunity costs for his/her labor. In theory, it is difficult to define the value of unskilled labor. Similarly, the improved fertilizing value of biogas slurry will not be accepted by most farmers as a basis for cost-benefit analysis. They tend to judge the quality of slurry when counting the bags after harvest. Because a monetary calculation is not the only factor featuring in the decision to construct and operate a biogas plant, other factors come in which are less tangible: convenience, comfort, status, security of supply and others that could be subsumed under 'life quality'. Acceptance by the target group Besides the willingness and ability to invest considerable funds in biogas technology, there is a complex process of decision making involved when moving from traditional practices to a 'modern' way of producing fertilizer and acquiring energy. Hopes and fears, expected reactions from the society, previous experiences with modern technology, all these feature in a decision. For a biogas program, it is important to realize that economic considerations are only part of the deciding factors in favor or against biogas technology. All these factors can be subsumed under acceptance. Acceptance is not a collection of irrational, economically unjustifiable pros and cons that a biogas extension project is called upon to dissolve. Rural households, as a rule, take rational decisions. But rural households and biogas programs often have information deficits that lead to non-acceptance of biogas technology by the target groups.

Bridging this information gap from the farmer to the project and vice versa is a precondition for demonstrating the economic viability in a way that is understandable, relevant and acceptable to the farmer.

Biogas programs

Biogas programs, however, should not neglect the argument of improved yields.

Increases in agricultural production as a result of the use of bio-fertilizer of 6 - 10 % and in some cases of up to 20 % have been reported. Although improved yields through biogas slurry are difficult to capture in a stringent



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economic calculation, for demonstration and farmer-to-farmer extension they are very effective. Farmers should be encouraged to record harvests on their plots, before and after the introduction of biogas. Statements of farmers like: "Since I use biogas slurry, I can harvest two bags of maize more on this plot" may not convince economists, but they are well understood by farmers.

As mentioned earlier, to tap the potential of various renewable resources of energy, a variety of technology dissemination programmes are being implemented by the government in active collaboration with NGOs (non-governmental organizations), like TERI. In the last two decades, complexities in rural energy planning have been seriously considered and linked with overall development planning by way of decentralized planning. Programmes are being implemented at block level, such as the IREP (Integrated Rural Energy Programme), which was coordinated by the Energy Cell of the Planning Commission. The MNES earlier started with village-level planning and implementation of projects. Later, it attempted to develop a methodology for district-level energy planning in select districts of the country. In order to be more effective in implementation as well as administration of energy activities, the MNES has now chosen to devise energy plans at the block level. The studies are being undertaken in select 100 blocks in different states.

Biogas application

Biogas can be used for electricity production on sewage works, in CHP gas engine, where the waste heat from the engine is conveniently used for heating the digester; cooking; space heating; and process heating. If compresses, it can replace compressed natural gas for use in vehicles, where it can fuel an internal combustion engine or fuel cells and is a much more effective displacer of carbon dioxide than the normal use in on-site CHP plants

Disadvantages of Biogas

The process is not very attractive economically on a large industrial scale. It is very difficult to enhance the efficiency of biogas systems.

Biogas contains some gases as impurities, which are corrosive to the metal parts of internal combustion engines. Not feasible to set up at all the location.

Recent developments

With the many benefits of biogas, it is starting to become a popular source of energy and is starting to be used in the US more.

On 5 Oct., 2010, biogas was injected into UK gas grid for the first time. Germany is Europe's biggest biogas producer and the market leader in biogas technology. To create awareness and associate the people interested in biogas, the Indian Biogas Association was formed. India's Ministry of New and Renewable Energy offers some subsidy per model constructed.

Limitation

The construction costs of biogas plants vary between different countries, they are often high relative to the income of the farmers and other potential users.

Poor farmers are still lacking behind for adopting this technology because :

Initial cost of installation of the plant is high number of cattle owned by an average family farmers is inadequate to feed a biogas plant

Conclusions

Biomass is available all round the year. It is cheap, widely available, easy to transport, store, and has no environmental hazards.

It can be obtained from plantation of land having no competitive use.

Biomass-based power generation systems, linked to plantations on wasteland, simultaneously address the vital issues of wastelands development, environmental restoration, rural employment generation, and generation of power with no distribution losses.



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It can be combined with production of other useful products, making it an attractive byproduct.

Biogas, although typically used for heating and cooking, can also be used to fuel a genset to produce electricity. 3.4 million biogas digesters are in daily use in India, and smaller.

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Product	Colour	Pigment Type	Solids %	Full Shade	Full Shade	Reduced Shade 1:10	Full Shade	Reduced Shade 1:10
PP-17-712	Bordeaux	Organic	21	4	4	4	4	4 - 5
PP-17-724	Dark Brown	Inorganic	25	2	4	4	4	4 - 5
PP-17-726	Yellow	Organic	24,5	4	4	4	4 - 5	4 - 5
PP-17-732	Black	Inorganic	26	4 - 5	4	4	4 - 5	4
PP-17-738	White	Inorganic	52	4 - 5	4	4	4	4 - 5
PP-17-758	Orange	Organic	23	3	4	4	4 - 5	4 - 5
PP-17-760	Blue	Organic	20	3 - 4	4	4	4 - 5	4 - 5
PP-17-780	Red	Organic	22	3	4	4	4 - 5	4 - 5
PP-17-785	Ochre	Inorganic	29	2 - 3	4	4	4 - 5	4

* Wool Blue Scale ** Grey Scale

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(Courtesy information source Indofil Ltd.)

KANPUR TANNERIES TO SIGN MoU WITH STATE AT BUSINESS MEET IN WEST BENGAL

About 85 tanneries of Kanpur the leather capital of the country are set to sign a memorandum of understanding (MoU) with the West Bengal Government during the two day Bengal Global Business Meet 2018 in January next year.

Talking to the Statesman, Mr. Ramesh Juneja, Regional Chairman (East), Council of Leather Export, informed that about 200 companies from Kanpur, Chennai, Kolkata and even from abroad will set up tanneries in Kolkata Leather Complex and about Rs. 5000 crore will be pumped in.

It will generate a direct employment opportunity for about 10 thousand people", he added. "State Chief Minister Ms. Mamata Banerjee and Finance, Industry & Commerce Minister Mr. Amit Mitra have already invited Mr. Mukhtarul Amin, Chairman of the Council of Leather Exports in India to attend the two days BGS' 2018 at Kolkata, Amin's company – M/s Super House Tanneries of Kanpur, will invest around 50 crore", added Mr. Juneja.

(The Statesman – 02/12/2017)

BATA PROFIT RISES ON LOWER COSTS

Bata India has reported a 24 percent growth in net profit for the July-September quarter of 2017-18 on the back of falling expenses. The increase in the bottom line is

because of a focus on value added products and improving efficiencies in cost structure, the footwear major said on Tuesday.

Net Profit at the end of the reporting quarter was Rs. 42.9 crore compared with Rs. 34.6 crore in the corresponding period of the previous year. Net sales during the quarter stood at Rs. 586.9 crore as against Rs. 583.7 crore in the year-ago period.

Total expenses during the quarter was Rs. 537.6 crore compared with Rs. 543.7 crore in the year-ago period, aided by a 13.34 percent decrease in raw material cost.

(Indian News Agency – 20/11/2017)

LEATHER, BONE, HORN, MoP SHIPMENTS TO BE CLEARED IN TIME

EPCH in its endeavor to facilitate exports of handicrafts from the country have been regularly representing issues with the Customs, Wildlife, Archaeological Survey of India and various other departments. One such issue which required intervention of the highest authorities in the Government of India was clearance of items made of horn, bone, mother of pearl, leather handicrafts and traditional art ware at various ports across the country.

Rakesh Kumar, ED – EPCH, informed that in order to address the concerns raised by EPCH, Commissioner, Single Window Project, CBEC convened and chaired a meeting on November 14, 2017 at New Delhi wherein Officials from Archaeological Survey of India, Wild Life Department and Customs were present.

(Indian News Agency – 20/11/2017)

GOOD PERFORMANCE FOR LEATHER FOOTWEAR IN BANGLADESH

According to the Leather goods & Footwear Manufacturers & Exports Association of Bangladesh, the leather industry in Bangladesh closed its first quarter of the new fiscal year (July-September), with exports earnings just slightly below the strategic target for the period (99%). It had been set a 328.11 million US dollars earnings goal for the first quarter, but the industry achieved an export earnings of 324.62 million US dollars.

Total earnings from exports of the leather segment reached 47 million US dollars in the period, which



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compares to 57 million US dollars established as target for the first quarter. A decline was also registered compared to similar period in the previous year.

Exports of leather goods also missed the target, as earnings from sales abroad within this segment of products reached 111 million US dollars, below the 128 set for the period.

(Indian News Agency – 20/11/2017)

EIGHT TANNERIES FACE CLOSURE

The Tamil Nadu Pollution Control Board (TNPCB) has ordered the closure of eight of the 11 tanneries functioning at Sembattu and Gundur in the city for failing to rectify defects in their pre-treatment system even after giving them enough time to comply with norms.

Tangedco is connected power supply to eight tanneries after the TNPCB Chairman issued the order, a board official said. The tanneries were required to operate treatment systems on their premises to treat the effluent before it was discharged to the common effluent treatment plant (CETP), which had to achieve zero liquid discharge (ZLD) status.

The TBPCB said action was taken following a long and due process after defects were noticed in the pre-treatment systems at the individual tanneries in November last year. "Show cause notice were issued and personal hearing was conducted during January 2017 and as requested by them three months was given by the board. But the tanneries have not rectified the defects", said A. Rangaswamy, District Environmental Engineer, TNPCB, Tiruchi.

(The Hindu – 10/12/2017)

TRADE POLICY REVIEW OFFERS INCENTIVS TO PUSH EXPORTS

Commerce and Industry Minister Suresh Prabhu today let out more incentives while unveiling the the mid-term review of the foreign Trade Policy 2015-20 with a view to boosting exports.

The minister said the Merchandise Exports from India Scheme (MEIS) incentive rate will be raised by 2 percent

across the board for labour intensive/MSME sectors. The increase in annual incentive by 34 percent to Rs. 8450 crore will benefit leather, handicraft, carpets, sports goods, agriculture, marine, electronic components and project exports, the minister said in a tweet.

The mid-term review, Prabhu said, "aims to promote exports by simplification of processes enhancing support to high employment sectors, leveraging benefits of GST, promoting services exports, monitoring exports performance through state of the art analytics".

The focus of the FTP, he said, will be on exploring new markets and products as well as increasing India's share in traditional markets and products. Emphasis will be on enhancing participation of Indian industry in global and regional value chains, he minister added.

The FTP will provide "additional annual incentive of Rs. 749 crore for the leather sector", the ministry said in a tweet.

(Indian News Agency – 04/12/2017)

CENTER CONSIDERING MAKING RULES BANNING SALE OF CATTLE AT MARKET 'MORE ACCEPTABLE'

The center is "considering making certain changes to a notification which bans the sale and purchase of cattle at animal markets for slaughter, to make it more 'acceptable', a top official said, prompting animal rights body PETA to term it a "Dark Day" for animal.

The Environment Ministry, in May 2017 had notified the stringent Prevention of Cruelty to animals (Regulation of Live stock Markets) rules, 2017 under the Prevention of Cruelty to Animal Act. Under the rules, there was a ban on the sale and purchase of cattle at animal markets for slaughter, a move that was expected to hit the trade and export of meat and Leather.

The rules had also prohibited practices cruel to animal, including painting of horns and putting ornaments of decorative materials on them.

(Political & Business Daily – 01/12/2017)

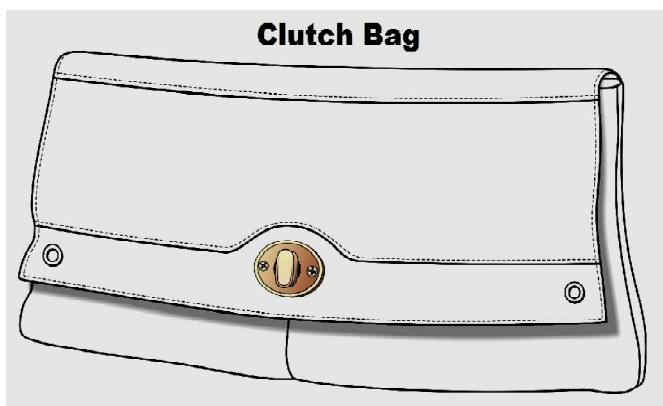
LESSON ON LEATHER GOODS – Part I

Shome Nath Ganguly

Former Principal of Karnataka Institute of Leather Technology

(The purpose of this article is to advise the students as well as artisans engaged in leather goods industry.
Shri Puranjan Mazumder of FREYA helped me to prepare this article)

Clutch Bag

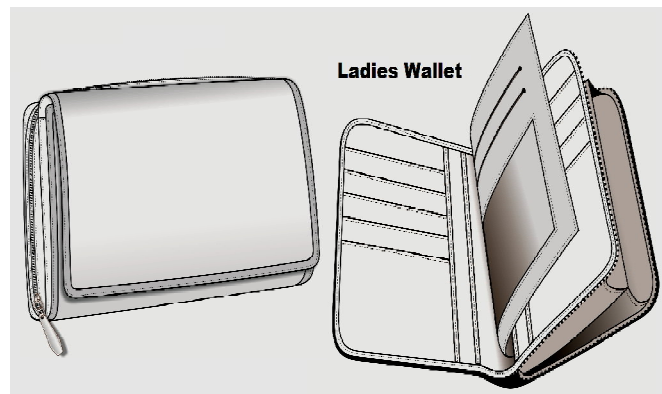


A Clutch bag is a small but long one without a handle. Usually it is carried to evening parties, hence it is also called Evening bag. Jewels, crystals, embroideries, and other types of decorations are used on clutch bags to make them more attractive. A clutch purse is a women's accessory designed to hold a few necessities like a driver's license, a cell phone, and a credit card. **Clutch purses are designed to be carried by hand, but some have a detachable chain or leather strap, so they can also be worn hanging from the shoulder.** Clutches come in a huge variety of shapes and styles. These vary with brands and the latest taste of fashion. The clutch purse had gone out of fashion in the early 19th century, but it regained its popularity and remains well liked today as an evening bag.



WALLET OR MONEY PURSE

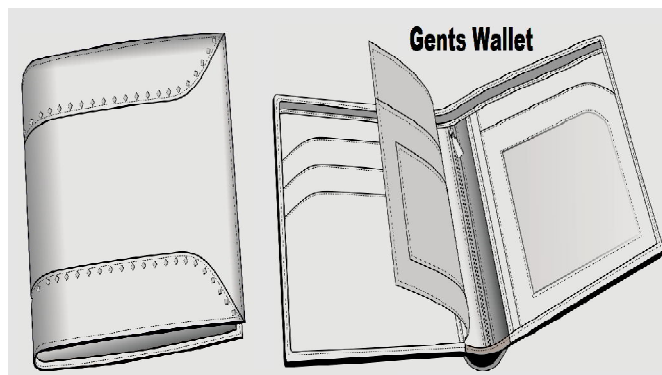
The history of purses in general date back to the Babylonian era. In those days purses were generally used in religious ceremonies, but later were more commonly used for carrying money and valuables. Both men and women in ancient times wore small purses on a belt.



The term purse, originally, was referred to a small bag for holding coins. Purses were made of soft fabric or leather. A handbag on the other hand is a larger accessory that can hold objects beyond currency, such as personal items. The term handbag began to appear in the early 1900s. Today people use the terms purse and handbag interchangeably.

The Wallet or money purse is a flat, folding pocketbook, large enough to hold paper money, identity cards, credit cards, driver's license, etc. and sometimes having a **compartment for coins.** **Wallets are usually pocket-sized.** Men's wallets & Ladies purses both are usually designed rectangular.

Both men & women use wallets regularly nowadays. These types of bags have huge demand in our domestic as well as export market. As digital money transaction is gaining popularity, Card Holders has emerged in the market. These Card Holders are designed to only carry few cards, they are thus smaller and more compact.



Kolkata is a major hub for making all these types of small leather bags in for the export market. Cow, goat & sheep leathers are used as the basic raw material for making these types of small bags.



**PHYSICAL PROPERTIES OF SHOE UPPER MATERIALS AND THEIR
EFFECT ON FOOTWEAR COMFORT***

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Central Leather Research Institute Madras-20

ABSTRACT

A comparative study of full chrome retanned and semichrome leathers with synthetics is made. Various physical properties such as water absorption, water penetration, water vapour permeability, effect of wetting and drying, rate of drying, resistance to perspiration, tensile strength, elongation, percent set, flexibility, apparent density and resistance to heat and cold of the upper materials are measured. The results obtained are discussed from the points of view of comfort.

The properties of footwear materials which contribute the wearer's comfort is a subject of universal interest. But very little work has been done on this very important subject of foot comfort. Obviously foot comfort depends on the absence of painful pressures anywhere on the foot, and on keeping it warm in cold weather and cool in hot weather. Comfort in footwear concerns with the physiology of the foot, environmental conditions and the physical properties of the materials used. This study mainly concerns with the physical properties of upper materials. The important properties of uppers which will influence the comfort of the footwear are : (1) water vapour permeability, (2) Moisture absorption and desorption, (3) Area stability, (4) Effect of wetting and drying, (5) rate of drying, (6) water absorption, (7) water penetration, (8) water vapour absorption (9) perspiration resistance, (10) lightness, (11) Flexibility (12) Plasticity of leathers, (13) Tensile strength, (14) Elongation, (15) Stitch tear strength, (16) Resistance to cold and (17) Resistance to heat. Hence these properties of the various upper materials were measured and the results obtained are discussed from the points of view of comfort.

Experimental Procedure

All samples were conditioned for a week at $65\% \pm 2\%$ relative humidity and $80^\circ \pm 4^\circ\text{F}$ temperature and then tested.

Full chrome, chrome retanned and semi-chrome leathers and synthetics were used. All the leather samples were obtained from the butt portion.

For finding out the water absorption, Kubelka's apparatus¹ was used. The method suggested by Mitton² and approved by the physical Testing Commission of International Union of Leather Chemists³ was used for determining the water

*Paper presented at the ILTA Symposium, Agra, 1968.

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vapour permeability. Apparent density was determined using an Edwards' densimeter³ taking the necessary precautions. Bally penetrometer (I.U.P/10)⁵ was used for testing the water absorption and water penetration. A Tinius Olsen Stiffness Tester⁶ was used to determine the flexibility. Plasticity by linear strain⁷ was determined using a Scott Tensile strength tester. The "percent set" after a specified time was calculated as suggested by Bultin⁸. The tensile strength, stitch tear strength and elongation were determined following the methods 2011⁹, 2151¹⁰ and 2021¹¹ described in Federal Specification KKL-311a. Details regarding the measurement of other properties are given below :

Moisture Absorption and Desorption

Moisture absorption was studied at 0.65 and 100 % r.h. The size of the leather samples used was 10 cm × 6 cm. The amount of moisture absorbed and the percent increase in area was also found out at 65 and 100 % r.h.

Area Stability

The samples were conditioned at 0 % r.h. at room temperature of about 30°C. After measuring the area, the samples were transferred to 100 % r.h. After conditioning at 100 % r.h. the area of the various samples was measured. The change in the area of the samples is expressed as a percentage of the area at 0 % r.h.

Effect of Wetting and Drying

The effect of the wetting and drying was studied taking samples of size 15 cm × 10 cm. The samples were dipped in 400 ml. of water for 24 hours and then taken out. After removing the excess of water, the area of the samples was measured. This was repeated four times. The other properties tested were (1) percent elongation, (2) percent set, (3) compressibility, (4) resiliency, (5) stiffness and (6) shrinkage temperature.

Rate of Drying

Leather specimens (5.7 cm dia) from the butt portion were immersed completely in a beaker containing 200 ml. of water and removed when they had absorbed about the same amount of water. The samples were weighed, hung and allowed to dry naturally at room temperature. Periodic weighings were made and the percentage of absorbed water that evaporated or was lost at various time intervals was determined.

Water Vapour Absorption

The samples were conditioned at 0 % r.h. until equilibrium was reached and weighed at room temperature of about 30°C. Then they were transferred to a conditioned atmosphere of 100 % r.h. and kept for 24 hours. Then they were weighed.

The percentage water vapour absorption after 24 hours }
$$\frac{\text{Weight at 100 \% r.h.} - \text{weight at 0 \% r.h.}}{\text{weight at 0 \% r.h.} \times 100}$$

Perspiration Resistance

The samples were subjected to treatment with artificial perspiration and the cracking observed after bending the material through 180 degrees (KKL-311a method 3211)¹²

Lightness

Samples of the same size were cut from the same location on the side and weighed.

Resistance to Cold

This method is of use in determining the resistance of leather to cracking on being bent at low temperatures. The specimen (a rectangle of leather 2 inch in length and 1 inch in width) was placed in a cold chamber (-20°C) for 2 hours. While remaining in the cold chamber at the specified temperature, the specimen was folded cross-wise sharply on itself with the grain side of the leather out. The folded specimen was examined for any crack in the area around the bend.

Resistance to Heat

This method is of use in determining the effect of elevated temperatures on leather under normal atmospheric pressure and controlled humidity. The leather (test specimen) was heated for 45 minutes in an oven maintained at $150 \pm 3^\circ\text{C}$. The leather was heated dry. Immediately after removal from the oven the samples were tested for cracking.

Results and Discussion

Water vapour permeability

As a general purpose upper material should have high water vapour permeability. This property was measured for various upper materials. The results are given in Table 1. It is seen that for the synthetic substitute uppers the value is low. Full chrome uppers exhibit the highest value. The enormous surface area of the fibres in leather enables it to take up water vapour rapidly and to convey it to the outside air. The transmission of water vapour is favoured because it is transmitted by and through the substance of the leather fibres themselves. The greatest water vapour permeability of chrome leather is due to its greatest surface area. Previous studies^{13,14} proved that impermeable uppers lead to increased sweat retention in the boots and socks. Kennedy *et al*¹³ observed that the sweat or water vapour absorption capacity of the boots with the Melovin uppers were exceeded on many test days, giving

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rise to the appearance of saturation by moisture in the lining leather. Hence for a comfortable footwear, the upper material should have high water vapour permeability.

Moisture Absorption and Desorption

Moisture absorption and moisture permeability are factors which may well be of importance to the health of the feet. Hence various upper materials were tested for this property and the results are given in Table 1. From the results it is seen that the moisture absorption of chrome leather is the greatest and that of the synthetics is the lowest. The chrome tanned upper leathers shows more moisture absorption than the semichrome and chrome retanned leathers. It may be due to greater percentage of hide substance in chrome tanned leather. The chrome retanned leather absorbs less moisture, probably because the vegetable tannins prevent swelling. Moisture absorption will influence the area stability of the upper materials. Hence it will affect the comfort properties of footwear.

Area Stability

From the results given in Table 1, it is seen that the area is increased to greater extent at 100 % r.h. in the case of chrome tanned leathers (11 %) whereas the increase is nil in the case of chrome retanned leathers. At 0 % r.h., the percent decrease in the area is more in the case of chrome tanned leather (12 %). In the case of chrome retanned leathers, the percent decrease in area at 0 % r.h. is 8 %. If the dimensional changes are too pronounced, the shoe begins to lose its shape. The loss of shape will be more in synthetics as compared to leather.

Effect of Wetting and Drying

In field use, upper materials in contact with water and mud will sometimes crack and stiffen, water containing large amounts of salts and other materials has an adverse effect on uppers. During the processes of wetting and drying, poor leathers lose more water solubles, become flabby, and wear out quickly. Hence a study of the physical properties of the uppers before and after wetting is, made and the results are given in Table 1. From Table 1, it is seen that the area of the chrome leather is increased by 11.5 % which will affect the comfort properties of footwear. The increase in area is more in case of chrome tanned leathers. The moisture absorption capacity of the leathers is increased due to repeated wetting and drying. It may be due to the removal of the water solubles and tanning materials. This may be one of the reasons for the comfort of the used shoes.

Rate of Drying

The ability of leathers to dry rapidly is a desirable quality. Hence the rate of drying was determined and the results are given in Table 1. From the results it is seen that the rate of evaporation is more in the case of chrome tanned leathers than

semi-chrome and chrome retanned leathers. This may be due to the difference in the nature of the tanning, thickness and porosity of the samples. The rate of drying of synthetics is very poor. The reservoir capacity of the samples is in the reverse order. The rate of evaporation decreases with time and would thus seem to depend on the quantity of water contained in the samples. As the shoes are likely to become wet especially in winter season or in the cold countries, the rate of drying of upper materials assumes great importance.

Water Absorption, Water Penetration and Water Vapour Absorption

Functional footwear is expected to keep the feet dry by resisting the moisture from the outside, and by absorbing moisture from perspiration from the inside and allowing the same to evaporate. Shoes that cannot brush off external water obviously rot and deteriorate quicker than the water resistant ones. Hence the upper materials were tested for these properties and the results are given in Table 1. The results show from the point of view of the properties of water absorption, water penetration and water vapour absorption, which properties may be expected to influence comfort from a physiological stand-point, for normal conditions, full chrome appears to be better as it allows a greater amount of water vapour to pass through and at the same time absorbs water vapour to a fair extent. However, if the ambient conditions are very wet, the increased water absorption of full chrome compared to semi-chrome might make semi-chrome better. Even though the synthetic uppers have the maximum water resistance, their water vapour permeability and water vapour absorption characteristics are very poor.

Perspiration Resistance

Chrome retan has poor resistance to perspiration whereas the semi-chrome and the synthetics have the maximum resistance to perspiration. The perspiration resistance of chrome upper is poor. So semi-chrome upper leathers can be used for a comfortable footwear.

Lightness

Although we are provided with many strong muscles, the muscles which lift the foot and lower leg in walking are relatively weak and any extra weight which is placed on the feet becomes a burden. It has been estimated that one pound extra weight on the feet is equivalent to ten pounds extra on the back. Hence the weight per unit area of various materials were measured and the results are given in Table 1. Comparing full chrome, semi-chrome and chrome retanned leathers, chrome retanned leather is heavier than the other. The synthetics are having the lowest weight. The values for the apparent density also confirms this.

Flexibility

Flexibility of uppers is very important to shoe comfort. Hence this property was measured and the results are given in Table 1. The results showed that the syn-

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TABLE 1

Physical properties of upper materials

Properties	Full chrome	Semi- chrome	Chrome retan	Synthe- tics
1 Water vapour permeability mg/cm ² /hr	8.1	6.9	4.3	1.2-2.9
2 Moisture absorption at 100% r.h.	44	42	39	16-23
3 Area stability				
(a) percent increase in area at 100% r.h.	11	5.6	Nil	3.6-8.5
(b) percent decrease in area at 0% r.h.	12	6	8	14-18
4 Effect of wetting % increase in area due to wetting	11.5	9.8	7.9	10-22
5 Rate of drying % water evaporated after 24 hour	25.4	23.8	22.4	12-18
-do- 1 hour	7.6	7.1	6.2	1.2-4.3
6 Water absorption (static)				
cc/100 gm leather after ½ hour	12.9	9.6	18.3	7.9-12.4
" 2 hours	33.1	28.1	56.2	21.7-27.3
" 24 hours	87.6	89.8	89.6	58.3-69.7
7 Water absorption (dynamic)				
cc/100 gm leather after 2 hours	38.6	34.5	60.4	26.3-31.4
8 Water penetration (Time in minutes)	104	191	68	180-260
9 Water vapour absorption (per cent)	27	21	32	1.9-3.8
10 Perspiration resistance	Fair	Good	Poor	Good
11 Lightness				
(a) weight in gm (10 × 10 cm)	10.3	10.8	13.2	6-10.4
(b) A.D. gm/cc	0.78	0.78	0.86	0.50-0.73
12 Flexibility				
(a) Load required to bend the leather 0.25" in length and of unit cross section through an angle of 30°	9.2	10.6	16.4	6.8-12.8
(b) Flex endurance	Good	Good	Fair	Fair
13 Percent set(after 24 hours)	24	18	16	4.6-9.3
14 Tensile strength lbs/sq. in.	4030	3060	3580	1080-3100
15 Elongation (%)	70	36	52	58-86
16 Stitch tear (lbs/inch thickness)	1320	1260	1463	830-940
17 Resistance to cold	Good	Good	Good	Poor
18 Resistance to heat	Good	Good	Fair	Poor

thetic uppers and chrome uppers are more flexible than the others. Flexing endurance is good for chrome and semi-chrome uppers. For a comfortable footwear, the upper should not be too soft or too stiff.

Plasticity

An upper leather must meet the stringent mechanical requirements of the "lasting" process. Lasting is, perhaps the key process in shoe-making, since it is at this stage that the shape of the shoe is imposed on the materials from which it is made. Ideally, a material for shoe upper should be capable of being made to conform to the last in a few seconds, of retaining this shape on removal of the last—even after being worn and yet still making minor adaptations of shape to fit the foot of the individual wearer while standing or walking. The plasticity of the full chrome is more than that of semi-chrome and chrome retan and synthetics have low percent set.

Tensile Strength, Elongation and Stitch Tear

These properties were measured and the results are given in Table 1. The results given in the table show that the synthetics upper have lower strength. The stretchiness in synthetic materials is generally higher than in the leather samples. Among leathers chrome leather is having higher strength and higher elongation.

Resistance to Cold and Heat

If the upper material is having poor resistance to cold, it may become hard and thus will affect the comfort. Similarly, if the uppers are having a poor resistance to heat, it may become soft and affect the comfort. Hence this was studied and the results are given in Table 1. Chrome and semi-chrome leathers are having a good resistance to heat and cold. The synthetics become stiff at cold temperature and more flexible at hot temperatures.

Acknowledgement

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PHYSICAL PROPERTIES OF SHOE UPPER MATERIALS

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LOOK AT THE WORLD'S REGARDED ECONOMICS

(Part - I)

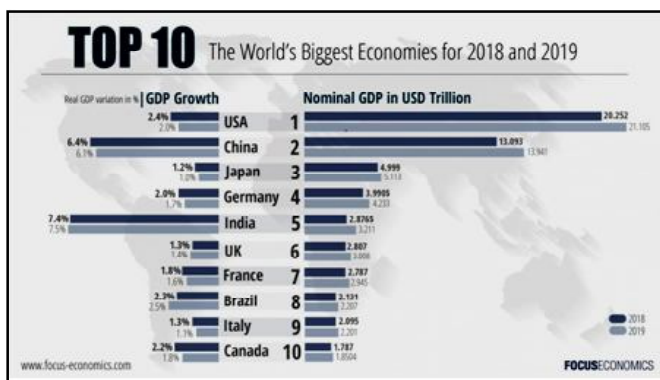
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Introduction:

As and when the discussion comes to the context of top national economies globally, although the order may shift around slightly from one year to the next, the key players are usually the same. At the top of the list is the United States of America, which according to Investopedia, has been at the head of the table going all the way back to 1871. However, as has been the case for a good few years now, China is gaining on the U.S., with some even claiming that China has already overtaken the U.S. as the world's Number 1 economy. Nonetheless, going by nominal GDP measured in U.S. dollars alone, the U.S. maintains its spot followed by China and Japan. In this post we take a look at the world's top economies according to our Consensus Forecasts for 2018 nominal GDP. We also discuss how the top economies change when looking at GDP per capita along with a highlight on emerging markets and their potential to catch up to the big players in the not too distant future.

Discussion:



1. United States

Despite facing challenges at the domestic level along with a rapidly transforming global landscape, the U.S. economy is still the largest in the world with a nominal GDP forecast to exceed USD 20 trillion in 2018. The U.S. economy represents about 20% of total global output, and is still larger than that of China. The U.S. economy features a highly-developed and technologically-

advanced services sector, which accounts for about 80% of its output. The U.S. economy is dominated by services-oriented companies in areas such as technology, financial services, healthcare and retail. Large U.S. corporations also play a major role on the global stage, with more than a fifth of companies on the Fortune Global 500 coming from the United States. The U.S. economy is projected to grow 2.4% in 2018 and 2.0% in 2019.

2. China

The Chinese economy experienced astonishing growth in the last few decades that catapulted the country to become the world's second largest economy. In 1978—when China started the program of economic reforms—the country ranked ninth in nominal gross domestic product (GDP) with USD 214 billion; 35 years later it jumped up to second place with a nominal GDP of USD 9.2 trillion. Since the introduction of the economic reforms in 1978, China has become the world's manufacturing hub, where the secondary sector (comprising industry and construction) represented the largest share of GDP. However, in recent years, China's modernization propelled the tertiary sector, and in 2013, it became the largest category of GDP with a share of 46.1%, while the secondary sector still accounted for a sizeable 45.0% of the country's total output. Meanwhile, the primary sector's weight in GDP has shrunk dramatically since the country opened to the world.

Today the Chinese economy is the second largest in the world and although it experienced massive growth in that 35-year span, authorities have taken a new approach to the economy called the "new normal." To avoid overheating the economy, authorities are conducting a managed slowdown, which has seen growth gradually slow year after year since 2010. The economy is projected to grow 6.4% in 2018, which is nothing to sniff at, but is a far cry from the over 10% annual growth seen no too long ago.

3. Japan

The Japanese economy currently ranks third in terms of nominal GDP forecast to come in at USD 5.0 trillion in



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2018. Before the 1990s, Japan was the equivalent of today's China, growing rapidly during the 1960s, 70s and 80s. However, since then, Japan's economy has not been quite as impressive.

During the 1990s, also termed the *Lost Decade*, growth slowed significantly, largely due to the burst of the Japanese asset price bubble. In response, authorities ran massive budget deficits to finance large public works projects, however, this did not seem to get the economy out of its rut. A number of structural reforms were then enacted by the Japanese government designed to reduce speculative excesses from financial markets, however, this led the economy into deflation on numerous occasions between 1999 and 2004.

The next measure taken was Quantitative Easing, which saw interest rates go zero and an expansion of the money supply to raise inflation expectations. After a period of not-so-positive results from QE, the economy finally appeared to respond. In late 2005, it outperformed both the U.S. economy and the European Union in terms of economic growth.

Despite what appeared to be a comeback, the economy has largely fallen on hard times since 2008, when it began to show signs of recession for the first time during the financial crisis. Japan's issues stem largely from unconventional stimulus packages along with subzero bond yields and a fairly weak currency. **Economic growth will once again be positive** in 2018, however, it is forecasted to stay at or below 1% from 2019-2022. For 2018 we project 1.2% percent growth and 1.0% for 2019.

4. Germany

In the ten years before the great recession, from 1999 to 2008, Germany's GDP grew 1.6% on average per year. Owing to Germany's dependence on capital goods exports, the German economy plummeted 5.2% in 2009, as companies around the world scaled back their investment projects in the wake of the financial crisis. **The following year, Germany's economy bounced back** with a strong 4.0% expansion. The next years were overshadowed by the persistent Eurozone crisis, which dented demand in Europe's southern countries. As a result, Germany's economy grew at a lackluster pace annually **between 2011 and 2013. The economy has since bounced back**, as has the Eurozone economy, and it'll

keep its spot at 4th **on the list of largest economies** with a nominal GDP of USD 4.0 trillion according to our forecasts for 2018. Analysts see Germany growing 2.0% in 2018, coming in just below 2017's forecast of 2.1%.

5. India

India is projected to overtake both the UK and French economies in 2018 to become the fifth largest economy in the world with a nominal GDP of USD 2.9 trillion.

From 2003 to 2007, India experienced high growth rates of around 9% annually before moderating in 2008 as a result of the global financial crisis. In the following years, India began to see growth slow due to a plunging rupee, a persistently high current account balance and slow industry growth. This was exacerbated by the decision of US to cut back on quantitative easing, as investors began to rapidly pull money out of India. However, the economy has since bounced back as the stock market has boomed and the current account deficit has **decreased. India's economy recently surpassed China's** to become the world's fastest growing large economy. We forecast India's growth at 7.4% FY 2018.

6. United Kingdom

In the 10 years before the Great Recession, from 1999 to 2008, the UK's gross domestic product grew 2.8% on average per year. As a consequence of overinvestment in the housing market and consumer's strong dependence on credit, the economy was hit very hard by the financial crisis and the credit crunch. In 2009, GDP fell 5.2%, mainly due to plummeting private fixed investment. However, GDP rebounded in 2010 to a 1.7% expansion. In the three subsequent years, however, growth did not post figures as strong as those before the crisis; average GDP growth was 1.0% in the 2011–2013 period. Since then growth has largely bounced back, however, Brexit is threatening the economy. Before the referendum many economists and financial institutions projected that the economy would take a hit if the UK voted to leave the EU. Since the Brexit referendum in **June 2016, prospects for the UK economy have become** highly uncertain, however, the economic Armageddon that was predicted by some has yet to come to fruition. Nevertheless, growth has stuttered and lagged significantly behind the EU average since the start of 2017. Brexit negotiations between the UK and the EU are yet to be finalized and there is precious little time left to get it



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done. Growth is likely to slow next year, as private consumption growth dips and fixed investment is dampened by pervasive uncertainty generated by Brexit. However, a stronger external sector and resilient global demand should cushion the slowdown.

The UK will fall out of the top 5 on the list of largest economies in 2018, with a nominal GDP of USD 2.8 trillion. Our panelists estimate GDP growth of 1.3% in 2018 and 1.4% in 2019.

7. France

France's economy will be the seventh largest in the world in 2018, representing around one-fifth of the Euro area gross domestic product (GDP) at USD 2.8 trillion. Currently, services are the main contributor to the country's economy, with over 70% of GDP stemming from this sector. In manufacturing, France is one of the global leaders in the automotive, aerospace and railway sectors as well as in cosmetics and luxury goods. Furthermore, France has a highly educated labor force and the highest number of **science graduates per thousand workers in Europe**.

Compared to its peers, the French economy endured the economic crisis relatively well. Protected, in part, by low reliance on external trade and stable private consumption rates, France's GDP only contracted in 2009. However, recovery has been rather slow and high unemployment rates, especially among youth, remain **a growing concern for policymakers**.

After a period of volatile growth readings in recent years, growth appears to be finally on a steady track, **having expanded 0.5% on a quarter-on-quarter basis in Q3 2017**. That marks the fourth consecutive quarter where **quarter-on-quarter growth came in at or exceeded 0.5%**. FocusEconomics Consensus Forecast expect GDP to grow 1.8% in 2018 and 1.6% in 2019.

8. Brazil

In the 10 years before the global economic crisis, from 1999 to 2008, Brazil's GDP grew 3.4% on average per year. This growth was driven, in part, by global demand for Brazilian commodities. After experiencing formidable growth in 2007 and 2008, Brazil's economy shrank 0.3% in 2009 as demand for Brazil's commodity-based exports fell and foreign credit waned. However, Brazil rebounded strongly the following year, growing 7.5%—the highest growth rate Brazil had experienced in 25 years. Since

then, growth has slowed—partially due to rising inflation—and **Brazil's economy grew an average of 2.1% annually from 2011 to 2013**.

Since then a combination of the ending of the commodities super cycle, tight credit conditions and political turmoil due to various corruption scandals have kept Brazil's economy down. However, Brazil keeps its spot in the top 10 with the economy having turned a corner early in 2017 and is expected to grow 2.4% in 2018 after contracting by over 3.0% in both 2015 and 2016. Brazil is forecast to have a nominal GDP of USD 2.1 trillion in 2018.

9. Italy

Italy is the world's ninth-largest economy, however, the country suffers from political instability, economic stagnation and lack of structural reforms, which are holding it back. Prior to the 2008 financial crisis, the country was already idling in low gear. In fact, Italy grew an average of 1.2% between 2001 and 2007. The global crisis had a deteriorating effect on the already **fragile Italian economy**. **In 2009, the economy suffered a hefty 5.5% contraction—the strongest GDP drop in decades**. In 2012 and 2013 the economy recorded contractions of 2.4% and 1.8% respectively, however, the economy has gradually improved in recent years. Nonetheless, it continues to be burdened by numerous long-standing structural problems, including a rigid labor market; stagnant productivity; high tax rates; a large, albeit declining, volume of non-performing loans in the banking sector; and high public debt. These weaknesses restrain the country's growth potential, keeping its growth outlook below that of its European peers.

Economic panelists see nominal GDP coming in at USD 2.1 trillion in 2018, increasing 1.3% annually.

10. Canada

Last but not least we have Canada, the 10th **largest economy in the world, just ahead of Russia**. **From 1999 to 2008, Canada posted strong economic growth and GDP expanded 2.9% annually on average**. Due to its close economic ties to the United States, in the **crisis-year 2009 Canada's economy contracted 2.7% over the previous year**. Canada did manage to recover quickly from the impact of the crisis, however, thanks to sound pre-crisis fiscal policy, a solid financial system, a relatively robust external sector and the economic



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strength of its resource-rich western provinces. Since 2010, growth has picked up again and between 2010 and 2013 Canada's economy expanded 1.4% per year on average. After the end of the commodities super cycle, the Canadian economy took a hit, but it has slowly recovered in recent years, growing faster than all of the G7 countries in Q2 2017. Economic panelists expect GDP to come in at USD 1.8 trillion with an annual growth rate of 2.2% in 2018.

The Trillion Dollar Club

Going forward what other countries could join what is called the Trillion Dollar Club and possibly crack the top 10? The Trillion Dollar Club is an unofficial classification of the largest economies in the world with nominal GDP of more than, yup, you guessed it, one trillion U.S. dollars. Currently there are 15 economies that make up the Trillion Dollar Club with a 16th projected to join the club once 2017 growth figures are released in early 2018, that being Indonesia. Turkey and the Netherlands are the 17th and 18th largest economies in the world and are projected to join the Trillion Dollar Club in 2020 and 2021 respectively. After that it'll be some time before a new economy joins the club.

In terms of other countries that could crack the top 10, Russia and Korea are right behind Canada in 11th and 12th place respectively, while Australia, Spain and Mexico aren't too far behind, rounding out the top 15.

What about GDP per capita ?

The top 10 economies in the world account for about 70% of the world's GDP, which is pretty staggering. But does a large economy necessarily mean that the average person is having a good time? Well, not necessarily. If we look at GDP per capita, which generally gives us an idea of the living standards and quality of life of a country's residents, the list changes up quite a bit.

The U.S. moves down to sixth on the list, while the rest of the top 10 largest economies fall substantially. Canada is next on the list of top GDP per capita economies at number 17 directly followed by Germany while China moves all the way down to number 62.

Here are the top 10 projected economies in terms of GDP per capita in 2018 according to the Focus Economics Consensus Forecast:

Luxembourg	USD 107,500
Switzerland	USD 80,922
Norway	USD 73,334
Iceland	USD 70,228
Ireland	USD 67,342
United States	USD 59,578
Qatar	USD 58,820
Denmark	USD 55,939
Australia	USD 54,888
Singapore	USD 53,847

Expectation in 5 years from now in 2022 and beyond

Regarding the largest economies, as you might expect it'll still be the same players in 2022, however, after overtaking the UK and France by 2018, India will also be gaining on Germany by 2022 to take that fourth spot behind Japan.

Apart from the top economies, everyone's favorite topic, the emerging markets, will become vitally important to the global economy in the next five years. Although you can expect per capita GDP to still be the highest in the developed world by 2022, the fastest growth in GDP per capita will indeed come from the emerging markets. According to our forecasts, the highest per capita growth from 2016–2022 will be in Myanmar with an 80% increase in that time span, followed by Azerbaijan, Bangladesh, Ukraine and the Democratic Republic of Congo with 78%, 73%, 68%, and 64% growth in per capita GDP, respectively.

Emerging markets are certainly catching up with the progress of the developed economies and according to many analysts they will catch up to many developed economies by 2020. This of course will cause a significant shift in the balance of power across the global economy and will represent vast new opportunities for domestic and international businesses.

With higher GDP growth in emerging markets will come higher household incomes and with generally younger



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populations, these economies will begin to play an ever more important role in the global economy. Services and consumer goods companies will have a tremendous opportunity to expand into these markets, and luxury goods will finally become available as more people become part of the middle class. Emerging markets are also likely to become more important foreign investors, rather than just being invested in. Investments into these nations will increase, furthering their economic growth; however, their own investments will only serve to enhance their position in the global economy.

As mentioned previously, by some calculations China is already the largest economy in the world, however, it appears that the new golden child is India. It is thought to be closer to usurping third placed Japan than China is likely to overtake the U.S. in the near future. It is believed by some that India and China may actually push the U.S. down to third place during the next decade citing in India's case that its young and faster-growing population will be the likely key drivers of growth. This would be quite the feat considering, as mentioned previously, the U.S. economy has held the number 1 spot since 1871.

With commodities prices coming back and expected to increase in 2018, countries like Brazil and Russia, rich in natural resources, are also tipped to come up in the world rankings of top economies. Mexico, on the other hand, which is last in the 1 trillion club, is in a bit of an uncertain situation with Donald J. Trump in the White House and the future of NAFTA up in the air.

Conclusion:

A variety of different scenarios could play out by 2022, but for next year the global economy is likely to continue to benefit from loose financial conditions and supportive fiscal policies. The strengthening is expected to be broad-based and extend to both developed and emerging economies. That said, while the economic recovery will gather steam in Brazil and Russia, and India should continue its positive growth trend, China's economy will continue its managed slowdown. Analysts expect the global economy to grow 3.2% in 2018, while in 2019, the global economy is seen decelerating slightly, to 3.1% growth, as tailwinds start to wane. Among those famous emerging markets, an improved economic outlook for India and resilient growth projections for China continue to shore up panelists' view on the Asia (ex-Japan)

region. Eastern Europe is in a sweet spot as Russia's economy recovers, while the Euro area is firing on all cylinders. Although higher commodities prices are supporting the outlook for the Middle East and North Africa economies, ongoing political unrest is putting a dent in any sharp economic improvement. Sub-Saharan Africa's economic outlook remains jeopardized by security threats and domestic imbalances. In Latin America, political uncertainties are plaguing the outlook as elections are set to take place in Brazil, Colombia, Mexico and Paraguay.

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Economic Corner

SIX MONTHS OF GST : HERE'S WHERE INDIA IS UNDER NEW TAX REGIME

It has been six months since the implementation of the Goods and Services Tax (GST) and the country is still working on to adapt to the new indirect tax regime, which subsumed over a dozen indirect tax. The government on Friday extended the deadline for filing first of the three comprehensive GST returns — GSTR-1 which is populated with sales details — to January 10 from December 31.

The GST Council has taken decisions on several fronts to make the process easier and increase compliance by reducing rates. On November 10, after its 23rd meeting, the GST Council announced rate cuts on as many as 178 items, following which the revenue fell significantly. However, to curb tax evasion, approved an early roll-out of the e-way bill for the interstate movement.

Earlier, tax evasion was rampant as some preferred not to pay tax by resorting to cash dealing. Once the e-way bill system is implemented, tax avoidance will become extremely difficult as the government will have details of all goods above the value of Rs 50,000 moved and can spot the mismatch if either the supplier or the purchaser does not file tax returns, a government official told PTI.

GST collections slipped for the second straight month to Rs 80,808 crore in November, down from over Rs 83,000 crore in the previous month. The total collection of GST till December 25 stood at Rs 80,808 crore for November and 53.06 lakh returns have been filed for the month. As per the data available, GST collections in July was over Rs 95,000 crore, while in August the figure was over Rs 91,000 crore. In September, it was over Rs 92,150 crore.

With government revenue falling, further rate cuts are unlikely as Finance Minister Arun Jaitley had been pressing for lower rates but only when there is revenue buoyancy. Aiming to protect consumers' interest, the government established National Anti-profiteering Authority under the GST. The GST Anti-profiteering body has the authority to act and tell the concerned business or supplier to reduce prices or undue benefit availed by it along with interest to the recipient of the goods or services.

It is likely that natural gas will get under the ambit of GST in next couple of months. Revenue authorities may now tighten the enforcement grip on industries, who had been taking it slow for the first six months allowing them to settle in the new tax regime.

(Financial Express – 01/01/2018)

INDIA' S APRIL – NOVEMBER' 2017 FISCAL DEFICIT HITS 112% OF FULL-YEAR TARGET

India reported a fiscal deficit of 6.12 trillion rupees (\$95.77 billion) for April-November, or 112 percent of the budgeted target for the current fiscal year that ends in March. Net tax receipts in the first eight months of 2017/18 fiscal year were 6.99 trillion rupees (\$109.39 billion), government data showed on Friday. On Wednesday, the finance ministry said it would borrow an additional 500 billion rupees (\$7.82 billion) this fiscal year that could lead to it breaching its fiscal deficit target of 3.2 percent of gross domestic product.

(Financial Express – 29/12/2017)

E-WAYBILL SYSTEM UNDER GST TO BE IMPLEMENTED FROM FEBRUARY 1ST

Tax avoidance will become difficult as the government will have details of all goods above the value of Rs 50,000 moved and can spot the mismatch if either the supplier or the purchaser does not file tax returns.

The Goods and Services Tax (GST) provision requiring transporters to carry an electronic waybill or e-way bill when moving goods between states will be implemented from February 1 to check rampant tax evasion and boost revenues by up to 20%.

After implementation of the GST from July 1, the requirement of carrying e-way bill was postponed pending IT network readiness. This was done even in the 17 states which in the pre-GST era had a well established electronic challan or e-way bill system, a top government official said.

Earlier, tax evasion was rampant as some preferred not to pay tax by resorting to cash dealing. Once the e-way bill system is implemented, tax avoidance will become extremely difficult as the government will have details of all goods above the value of Rs 50,000 moved and can spot the mismatch if either the supplier or the purchaser does not file tax returns, he said.

The all-powerful GST Council had on December 16 decided to implement the e-way bill mechanism throughout the country by June 1.

The official said e-way bill for inter-state movements will be implemented from February 1 and for intra-state



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movement from June 1. The official said states have been given the option of choosing when they want to implement the intra-state e-way bill between February 1 and June 1.

They have also been given the option to exempt movement of goods within 10-km radius, he said, adding all essential goods have been exempted from the requirement of carrying e-way bill.

Besides plugging tax evasion, the e-way bill will boost revenues by 15-20%, he said. "The experience of states which had e-way bill system in pre-GST era showed a 15-20% rise in revenue," he said.

The official said a pilot of e-way bill has been successfully run in Karnataka and the IT system is fully geared to meet any requirement. E-way bill is an electronic way bill for movement of goods which can be generated on the GSTN (common portal). Movement of goods of more than Rs 50,000 in value cannot be made by a registered person without an e-way bill.

The e-way bill can also be generated or cancelled through SMS, he said. When an e-way bill is generated, a unique e-way bill number (EBN) is allocated and is available to the supplier, recipient, and the transporter, he added.

Trade and transporters can start using this system on a voluntary basis from January 16. The rules for implementation of nationwide e-way bill system for inter-state movement of goods on a compulsory basis will be notified with effect from February 1, 2018.

This will bring uniformity across the states for seamless inter-state movement of goods.

(The Hindustan Times – 31/12/2017)

HOW WILL MARKETS PERFORM IN 2018?

In 2016, a large section of the investment fraternity worldwide expected the tide to turn against global equities. Markets had been on a roll for eight consecutive years since 2009 and it was time for the onset of the historical eight-year bear cycle.

It's been two years since and the bears are yet to emerge out of the woods. While the doomsayers are making themselves heard, the bulls seem to be very much in control as we enter 2018.

Just like many of its peers worldwide, Indian equities are likely to surge for a third consecutive year in 2018. The

end of easy money globally, however, could mean the gains do not match the outsized returns clocked in 2017, and the busy election calendar back home may create more than an occasional wobble.

Be that as it may, there are several positives to count on.

For one, an earnings revival and a bump-up in private capex may be on the cards, factors which could justify the 'rich' valuations somewhat.

"After spending nearly seven years mostly in negative territory, earnings revisions breadth is finally almost in the positive zone. Corporate India's earnings and balance sheet recession are ending and free cash flow is very strong, setting the stage for private capex," says Ridham Desai, managing director at Morgan Stanley India.

Anand Radhakrishnan, chief investment officer, Franklin Equity, Franklin Templeton Investments, India, adds: "The case for revival in private capex stems from improving corporate earnings, better lending capability of public sector banks post-recapitalization, and favourable market for equity issuances."

The Sensex currently trades at 25 times its 12-month trailing earnings, compared with the past five years' average of 19x.

In the past few years, sectors such as industrials, metals, public sector banks, telecom, and information technology (IT) have underperformed and pulled down the earnings to a large extent, which is why valuations look optically elevated, according to experts. "Even a marginal improvement in the numbers for some of these sectors could boost earnings figures in the next 12-18 months and make valuations look more reasonable," says Ravi Gopalakrishnan, head-equities, Canara Robeco Asset Management.

The deluge of domestic money through mutual funds is likely to continue as investors shift to financial assets from traditional products such as gold, real estate, and fixed deposits, which have given muted returns in the past few years. "India remains in the midst of a domestic liquidity supercycle. The \$420-525 billion in domestic equity inflows forecast over the next 10 years could have the power to keep India's relative multiples higher for longer," says a note by Morgan Stanley.



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The interest from foreign portfolio investors, or FPIs, may be harder to gauge. The US Federal Reserve is likely to opt for three rate increases next year, effectively choking the supply of easy money flowing into risky assets, somewhat. The impact will magnify if other central banks such as European Central Bank follow suit. According to Bank of America Merrill Lynch's India equity strategist Sanjay Mookim, the US Federal Reserve's liquidity infusion is likely to peak in Q2, which could impact global asset inflation, hurting Indian equities. "India is joined at the hip to the global tide, irrespective of its differentiated long-term potential. Foreign investments (into India) have been pretty volatile and increasing return on equity in US, if and when the Fed hikes rates, may shift the flow of funds," Mookim says.

Until now, global markets have been sanguine about the surge in crude oil prices, the Fed's easing of its quantitative easing programme, the threat from North Korea, the slowdown in China, and the impact of Brexit. "No one quite knows how these factors will play out in 2018," warns U R Bhat, managing director, Dalton Capital Advisors (India).

Brent crude oil prices have surged about 20 per cent to \$66 per barrel in 2017 and a sustained upmove to \$75-85 per barrel could roil Indian equities, feel experts. Back home, a disappointing earnings show could put the brakes on the market's upward trajectory. "If earnings

disappointments continue, the premium valuations may prove difficult to sustain," says BNP Paribas' Asia Pacific equity strategist Manishi Raychaudhuri.

The progress on banks' asset quality resolution, the extent of execution of government's infrastructure projects and the revival in private capex will be closely watched. A spending spree by the government in the run-up to the 2019 national elections could throw the fiscal math off course, and may be viewed negatively by investors.

"We may see some volatility going ahead," adds Bhat. Considering that the market is entering uncharted territory, experts believe that investors should prefer stocks with earnings visibility, structural positive triggers, and reasonable valuations. "We suggest staggered investments to benefit from intermittent volatility," says Radhakrishnan. His advice: opt for diversified equity funds with core exposure to large caps.

Canara Robeco's Gopalakrishnan is betting on infra and rural themes, considering the government's push for job creation and possible sops for the rural economy in the months ahead: "A rise in rural income will benefit FMCG as well as consumer discretionary companies in the automobiles, entertainment, and durables goods space."

(Business Standard - 29/12/2018)

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