A Winning Strategy for Sustaining

Vijay Kumar Shrotriya

The existence of organization, big or small, state owned or privately owned, profit making or non-profit making, is initiated with some purpose in mind and in that direction objectives are outlined. The organizational activities are designed and the task to perform those activities is assigned to the employees or workers as the case may be. The performance is evaluated from the perspective of organizational objectives. During the course of its operation, the organization at times faces competition from other organizations or with past performance or with situation. These forces of competition compel the organization to draft winning strategies so that each one of them can perform better than the other. And this is what keeps an organization on toes and organizations keep surviving like this for years. Just like human beings. The human life keep facing challenges, ups and downs throughout and this is what makes life interesting as well as worth living.

Individuals perform the tasks as assigned to them which contributes to achievement of organizational goals and ideally speaking, should also contribute to the individual goal achievement. The match between individual and organizational goal motivates the employees to perform their best. In case of mismatch of goals though individuals perform but they do not put their heart into work. The organizations as well as individuals have to somehow reach the match of commonality of goals. The organizations have to be very cautious in selecting the work force and making sure that the motivation of individual to work is not just earning but the satisfaction to his/her inner self. It is a challenging task for any organization. If the individual is not clear on what really his/her inner self seeks, adaptability and flexibility would be the key quality to be looked into the candidate. Anyway the match has to be from the beginning of the joining an organization or has to be made later as one spends more time in the organization.

An individual while selecting an organization to work has to put efforts in finding an organization which allows him/her to achieve his/her goal, through

achieving organizational goals. The motivation of remuneration and satisfying one's inner self has to go side by side. The organizations become effective when the heart of employees is interwoven with the organizational culture and system.

Primarily as individuals, ultimately we like to be happy. We aspire for happiness through different kind of activities that we perform. At the end of the day it is that sense of happiness which drives us further to start another day with full of positive energy. We tend to feel happy when our goals are achieved. Satisfaction is a measure of happiness and organizations show keen interest in knowing the satisfaction of their employees and customers apart from other stakeholders.

Utilitarian view determines the human aspirations and needs. Happiness is the goal of human life. In the process of achieving so called happiness, there are lots of compromises which are made. Happiness is not just merely a momentary response to the object, event or individual but it is a sustainable response. Hence if such events, objects and individuals provide sustainable positive response, it is happines. It is important to discover this facet of happiness since all through life we put forth our efforts to make our tomorrow better than today. However *nishkam karma* (performing without thinking about returns) provides sustainable positive response which results into real happiness. Happiness is an attitude or a state of mind which enthuse positive energy in one's thoughts and actions. Behind all our efforts, day in and day out, somewhere a driving force clings to have this positive feeling as an end result. At work as well as at family front the efforts are put to match the expectations. The proximity with the expectation results into a sustainable positive feeling called Happiness. So for leading a happy life, many a times it is suggested to expect less, because this is one way through which efforts get closer to expectation. Another way to be near the expectation is to put more efforts. An individual can choose either way in order to have a positive feeling.

The literature on happiness as such is contributed from the discipline of philosophy, psychology, sociology and economics primarily. Utilitarianism, subjective well-being, quality of life are some such terms which lead to study of happiness from different perspectives. Public policy has a basic target of prioritizing issues which results into social welfare.

For organizations as well, primarily it is achievement of goal/s which enthuse it with setting new goals and to keep performing towards its goals effectively. The organizations have to put in place a system and develop an inclusive culture which leads to provide satisfaction to all its stakeholders. For profit making organizations, though primarily their focus would be on earning profit, however, their concern for fair treatment of employees, providing value for money to customers and contributing to sustainable growth of the organization shall be able to win the trust of society in general. And it could lead to attaining organizational happiness.

This is the premise of this work and as developed nations are switching their focus from merely attaining economic growth towards social well being (happiness), it is the time for all organizations, big or small, state owned or privately owned, profit making or non-profit making, to think about attaining organizational happiness. Here some of the measures are suggested in order to make an organization, a happy organization, keeping in mind, an assumption that ultimately organizations aspire for Happiness as in case of Individuals.

According to a Chinese wisdom - Happiness surrounds three basic activities of human existence: Love, Work & Hope. Love leads to Life Satisfaction, Work leads to Job Satisfaction and Hope leads to putting one's best in order to satisfy oneself. Happiness is attained when the needs are satisfied. Happiness is related to needs and needs to be satisfied. The needs for human beings and that of an organization are different. Human needs are fulfilled by organizations and institutions like family,

government, state, market, work place, etc.

Here we study needs from the perspective of business organizations. They are elaborated and are further studied in relation to Organizational Happiness Framework. Man, Money, Material and Market (4Ms) are the basic needs of an organization. The organization has to manage these 4Ms in order to maximize profit and minimize cost. According to Earnest Dale, who wrote a book entitled *'Organization'* in 1975, *organizational needs are also satisfied by producing the best possible results to all the publics* i.e. employees, customers, local community and public in general. In this process the needs are satisfied and in one or the other way organization as an artificial person and the decision makers (at different levels of management) as natural persons derive happiness. At a macro level 1 call it Organizational Happiness (OH) which is a derivation from the happiness of individual stakeholders in the organizations and leads to transform an organization into a Happy Organization.

Organizational Happiness - Concept

OH is conceptualized on the basis of tangible as well as intangible factors. In general the perception about organizational performance and success is measured in terms of profitability or financial performance. Though financials are important but Just concentrating on that shall not be a wise approach to sustain positive organizational growth. Thus apart from financials, the organizations have to focus on the purpose of the organization. Does the organization want to leave behind a legacy of being most profitable organization, or most admired and/or respected corporation, or great place to work for organization, or happy organization. This is where the organizations have to deliberate on and accordingly draw their policies. This is where the framework of organizational happiness is suggested. It is assumed that as individuals, organizations would also ultimately strive for achieving organizational happiness and would like to leave behind a great legacy of having been a happy organization. In that direction this model is proposed which could be useful for all kinds of organizations depending on their line of operation or nature, motive, size and aspiration.

OH framework is designed to focus on pillars (Figure 1) which are tangible (objective) as well as intangible (subjective). They lie within the organization (internal)

and are driven by outside environment as well (external). In order to strengthen OH pillars, stakeholders (targets) are identified for whom appropriate efforts have to be pursued to achieve OH and to transform an organization into a Happy Organization which shall be measured through developing composite index on the basis of OH pillars.

Organizational Happiness - Pillars

OH pillars (Figure 1) are identified as financial performance (for management and promoters), employees' satisfaction (for employees/workers and staff), customers' satisfaction (for clients/buyers and users), and Corporate Social Responsibility (CSR) (for Society). Employees' (job as well as life satisfaction) and customers' satisfaction is subjective measure whereas financial performance and CSR is objective measure.

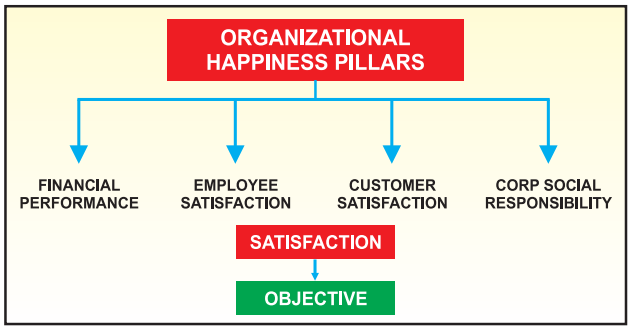

Figure - 1

Theoretically accounting and reporting has its role in the objective pillars whereas general management of the organization needs to strengthen subjective pillars through effective policies and their implementation. The orgnizational success could be gathered from its financial position and performance. Profit is the primary focus of any firm and it is one of the most important factors in order to judge organizational success of any organization. The organizations have to follow existing accounting standards and principles according to the law of the land and should get the accounts audited so that the authenticity of such accounting statements is

assured. Primarily, the financial statements can help an organization to know its financial position and profits, if any.

Through proper reporting practices the initiatives under CSR and the details of allocation and expenditure on such initiatives could be assessed. The expenditure on CSR activities as a percentage of profit should be taken as a measure to compare different organizations for OH. The OH pillars have to be focused through making strategies after identifying the target groups which hold these pillars strong. In that direction, OH targets are identified which are outlined hereunder.

Organizational Happiness - Targets

In order to strengthen OH pillars, OH targets have to be addressed through effective planning mechanism. The targets are identified as Employees, Management, Institutional partners (internal), Society, Suppliers and Clients (external). Employees, Management, Society and Customers are considered as primary targets whereas Institutional Partners and Suppliers are considered as secondary targets.

The promoters start a business organization with a primary target of earning profit. They are the primary stakeholder in the organizational initiatives, planning, decision making, and controlling activities. It is they who are primary responsible to provide leadership in establishing organizational objectives and guiding organizational efforts towards the set objectives. Promoters through an effective management manage the resources of the organization. They are interested in building the organization through sound financial structure. Their focus is on profitability and in assuring good return to the shareholders, whose indomitable support is most valuable for them.

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Institutional partners play an important role in building the organization. Here primarily institutional partners refer to the financial institutions which provide the life-blood to the organization and at times put their stake as well. They could be venture capitalists also. Their interest in the organization lies in seeing the growth of the organization through the abilities to respond to market forces successfully and in (developing products, services and experiences for the customers.

While management is the brain of the organization, employees are the hands. They join the organization with their personal goal and ambition. The match of their goal with organizational goal gives them a high to concentrate their heart to the organization and work. Their contribution makes or breaks the organization; hence they need to be treated well. Vineet Nayar of HCL Technologies developed a new concept called Employees First. Customers Second which makes a strong case of prioritizing employees over customers for attaining organizational objectives. It is based on a simple logic that only satisfied employees can satisfy customers.

Conventionally speaking most of the organizations concentrate on customers (external) or clients more than any other stakeholder. The products, services, information or experiences are all meant for customers, clients or users. As individuals they are the concern for all strategies. They have to be targeted and segmented according to the nature of product or service. Their expectations, behaviour, and feedback guide the formulation, design, price, and portfolio of the product or service. Organizations depend on customers; if there are no customers there would be no organization. The firm has to focus on the products for the customers after studying them thoroughly.

Most of the organizations depend on suppliers for

constant supply of raw material or inputs. They provide the base. Organizations have to play a cautious role in selecting the suppliers. Their selection should be based on research on their capability to supply required goods or services, their past records, their client base, their core competencies and their fit to the organizational policies.

Though employees, customers, clients and suppliers are part of society, there are social interest groups and other social institutions as well as individuals who also play an important role in the life of an organization. Business organizations follow the premise of 'society' as a concept as there is interdependence of organization on society and of society on organization. Both co-exist for mutual betterment. The organizations play a very strong role in building societies and through innovation and use of technologies responding to the changing social needs. They need to be targeted through organizational strategies.

Organizational Happiness - Efforts

Organizational policies have to such which aim at targeting internal as well as external beneficiaries or stakeholders. Management as an entity is interested in improvement in the profitability of the organization through higher return on investment, reducing cost, improved productivity, satisfied employees and customers and proactive corporate citizenship behaviour of all the stakeholders. The strategies should be designed in such a way that the organization is able to sustain its profitability with gradual growth. The response to market and capitalization of market opportunities depending on The product/service portfolio within the industry of operation should be targeted keeping in mind the strengths and weaknesses of the firm. Innovation and creativity should be the prime focus of organizational efforts.

The strategies have to be such that develop a sense of mutuality and co-existence with them. The relationship with the institutional partners should be nurtured so that the credit requirements are met whenever needed. The ability to respond to the opportunities through innovation and responsiveness to change and better compliance mechanism has to be shown to the institutional partners who could foresee better return on their capital.

The selection of employees should be done keeping in mind not just the nature of work that the person is going to perform but person's ultimate motivation to join the organization. Proper talent management teams should be initiated to mentor the employees. Fair and attractive compensation depending on the industry norms, appropriate perks and incentives, committed welfare schemes, creation and maintenance of conducive work environment, proper performance appraisal systems, and convincing career growth opportunities within the organization, should be prioritized over other policies.

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We have grown with thinking that Customer is God and hence can never be wrong. It is absolutely true that customers are important for business, business is for customers anyway. But by prioritizing employees over customers, customers/clients can be served better value. This value would not be momentary rather it would be timeless and precious. However, the intention here is not at all to sideline customer. Customers have to be targeted and all the products services have to be designed keeping in mind their requirement, their capacity to pay and their expectations. Proper research has to be carried out before and after sale to make sure that the customers' needs are addressed properly. In the competitive environment the strategies of the rival firm should be studied and countered with better products and value for money. Their primary concern is to serve value to the customers.

The back end strength is derived through constant supply of material through suppliers. Hence the relationship with strong trust has to be built with them. The interdependence between the firm and its suppliers should be kept in mind while selecting the suppliers. Proper supply chain management systems should be developed to ensure smooth inflow of material into the process and wherever possible resource sharing should also be initiated so that mutually beneficial alliances could be formed. The payment system should be efficient and prompt which does not put the supplier into odd situation. Strong Supplier Management system has to be developed.

The organizations need to take up social causes and participate in community development projects in order to behave like responsible corporate citizens. Though, the motive of increasing profitability has been finding dominance in the organizational strategies. However, in last few decades there has been a consensus amongst the organizational heads to respond to the social responsibility and to share the burden of respective governments by investing in social infrastructure and related areas.

As individuals, organizations have to reach the level of self actualization need. Organizations have to take up social causes in order to partner with the state to share its responsibility in developing strong social infrastructure. They need to allocate funds for the causes related to education, medical facilities, environment protection, sanitation, drinking water etc. These initiatives fall under the category of Corporate Social Responsibility or corporate philanthropy. Almost all the big business houses are spending hugely for social causes. Organizations can achieve their self actualization need through these initiatives. In the process of responding to market forces and capitalizing the available opportunities, the organizations exploit the natural resources, though with honest intentions of serving the society. However, at times it leads to disturbing the environment. In such cases it is the responsibility of the organization to contribute to the improvement of the environment through effective measures.

Organizational Happiness — Index

A composite index of the measures on OH pillars (financial performance, employee satisfaction, customer satisfaction and corporate social responsibility) could be developed. For financial position, measures like return on investment, earning per share and turnover could be used. The expenditure as percentage of profit could be taken as a measure of CSR.

Measurement of satisfaction is a process which is subjective in nature. However, many industries and organizations get into measuring satisfaction of various interest groups. There are many instruments developed in order to measure satisfaction of employees as well as of customers. Many organizations try to know the satisfaction level of their employees on the variables such as salary, relationships (with subordinated, superiors and co-workers), growth opportunities, location, working conditions, etc. To measure employees' satisfaction, apart from job satisfaction measures, life satisfaction measures could also be used to relate and study their relationship and interdependence.

Similarly the satisfaction level of customers is measured on account of product quality, price, appeal, service, availability, response time, etc. This is the process of quantifying satisfaction level of employees and customers. Once the organization is satisfied with the satisfaction level of employees and customers, it can design its future policies and extent of operations.

The organizations could compare the indices of the current year with the past year to know whether they have improved or gone down. Accordingly they could strategize for the next year Comparisons across industries, organizations, products/departments and geographies could be made on the basis of the composite index in order to get feedback on OH efforts and redesign, restructure the OH efforts focusing more on the pillar that had lower index value. This is suggested for all kinds of organizations. Isn't it that all organizations inherently want to be happy organization?

Source : www.smeworld.org

Stress management starts with identifying the sources of stress. This isn't as easy because the true sources aren't always obvious, but this is the first step. One of the major causes of stress is one's own stress-inducing thoughts and feelings. Think how you currently manage and cope with stress. Unfortunately, people cope with stress in ways that compound the problem. The strategies you are trying to cope up with stress should be healthy and productive. There are various healthy ways to manage stress. But all these methods require a change from your routine. Either Change the situation or change your reaction.

STRESS MANAGEMENT

Satyashri Vivek

In common language we use the word "stress" for the feeling when everything seems to be extreme and too much. It is a body's method of reacting to a challenge. When one is overloaded with work or thoughts, he wonders whether he can cope up with the pressure imposed by that situation.

On one side demands and deadlines make you more efficient and on the other side you can land in a situation where everything seems impossible. Stress can be typically described as a negative or a positive condition that can have an impact on one's mental and physical well-being. When stress is positive it gets you going and it's good for you. Without stress the life may be boring and probably feel pointless. When stress undermines both mental and physical health, it becomes negative stress. We all know that positive stress is good, so we shall be focusing on negative stress only and the ways to get out of that situation with simple techniques and meditation.

Stress management starts with identifying the sources of stress. This isn't as easy because the true sources aren't always obvious, but this is the first step. One of the major causes of stress is one's own stress-inducing thoughts and feelings. Think how you currently manage and cope with stress. Unfortunately, people cope with stress in ways that compound the problem. The strategies you are trying to cope up with stress should be healthy and productive. There are various healthy ways to manage stress. But all these methods require a change from your routine. Either Change the situation or change your reaction.

Being with nature helps

We all know that our brains get fatigued after working for long periods of time, particularly if we are doing a job which requires a lot of concentration. Taking a break doesn't always help

In times of heightened stress, take a quick break and simply start working with plants. Take care for them.

during high-pressure times. What's crucial is the type of break taken. During such time taking a stroll in the park is far better than drinking lots of tea or coffee. Researches have shown that taking a stroll through a natural setting can boost performance. There is a positive link between nature and personal wellbeing. Studies show that viewing natural scenes or elements fosters stress recovery by evoking positive feelings, reducing negative emotions, effectively holding attention/ interest and blocking or reducing stressful thoughts.

Nature has a soothing effect on our mind. When combined with meditation, its beneficial effects knows no boundaries. Performance on memory and attention is improved by 20 percent after a walk in natural surroundings as compared to a stroll down a busy street. Even looking at pictures of nature in a quiet room has a greater cognitive boost than walking down a busy urban street. Nature can improve mood or lower hospital rehabilitation times.

When you find yourself stressed, just find a quiet spot near plants, sit down, and take several deep, cleansing breaths. When sufficiently relaxed, pick out a single plant to focus on. Concentrate exclusively on the plant & notice its shape, size, colour etc. Imagine its root system, sucking in water and nutrients. Empty your mind of all other thoughts and distractions. Meditate in this manner for five to ten minutes.

Smile or laugh can not only lighten the mental load but also cause positive physical changes in the body. Everyone likes to get associated with positive people who prefer a smile to a frown. So, always try to be in situations where you have an opportunity to smile or laugh. If the times are especially hard, read some jokes or hang out with your happy go lucky type of friends. This will make your task look easier and help you to meet challenges with humor.

Plant out your Stress

In times of heightened stress, take a quick break and simply start working with plants. Take care for them. Watering, trimming unruly leaves, and cleaning the plant can be a welcome respite from stress. Make this a hobby that can help you feel relaxed. By spending a few minutes with any sort of greenery, you will feel refreshed.

Wildflowers and ferns can provide a beautiful backdrop to any spiritual experience. Citrus trees and cacti can serve this purpose in warmer climates. Medicinal plants such as aloe, chamomile and lavender can help reinforce the healing aesthetic of the space. Colourful and fragrant flowers will allow the garden to engage your senses on multiple levels. If you live in a busy neighbourhood, tall trees act as a natural shield to keep your space private and serene.

Heart is the seat of conscience which is represented by green colour, the colour of nature. Meditating with plants can be an escape from the stress of real life, provide a beautiful and therapeutic place for relaxation, rejuvenation, and meditation.

The concept behind meditation is to consciously relax one's mind and body to get rid of various positive or negative thoughts that come in the mind. Meditation diverts the mind from the problems that are causing stress. It gives the body time to relax. In the process stress hormones that may have built up are cleaned and removed from the body.

Meditation is considered to be a mystical thing. But it is not so. It is a scientific technique that one can learn and do quite easily. Just sit quietly and comfortably with straight back bone. Close your eyes. Focus on your breathing. Consciously relax all the muscles of your body one by one starting from your toes. Breathe in and breathe out deeply twenty times, focusing on each inhale and exhale, hearing the sound that is generated by the wind that passes through the nose. This way you can occupy your mind during meditation. You can also focus on an object, sound, image, idol or some word. The important thing is to keep your attention focused. It is a very useful and

practical relaxation technique and stress buster. By meditating, body gets relaxed, stress hormones get subsided, mind gets a break from unpleasant and stressful thoughts and make you cheerful and happy.

Prefer a smile to a frown

Smile or laugh can not only lighten the mental load but also cause positive physical changes in the body. Everyone likes to get associated with positive people who prefer a smile to a frown. So, always try to be in situations where you have an opportunity to smile or laugh. If the times are especially hard, read some jokes or hang out with your happy go lucky type of friends. This will make your task look easier and help you meet challenges with humor.

In the end it all comes down to self-awareness and emotional intelligence. Although a random meditation will help yet regular practice will deepen the experience. If a balance between ambitious and tranquil sides is maintained one can very easily lead a healthy and happy life. You should identify your stress triggers and manage the ones that you can control. For those, that you can't control leave them for the nature and almighty to manage. That's the ultimate realisation.

Source : SME World, January - 2014

INNOVATION & TECHNOLOGY

MAGLEV TECHNOLOGY

Paul Singh

In 20th century, airplanes revolutionized transportation Industry and have provided the fastest way to travel hundreds or thousands of miles. But lately, the air travel has become more and more congested. Now, a new form of transportation that could revolutionize transportation of the 21st century is Maglev-which is short for Magnetic Levitation Technology. These are high speed vehicles lifted by magnetic repulsion, and propelled along an elevated guide-way by powerful magnets attached to the vehicle. The vehicles do not physically contact the guide-way, do not need engines, and do not burn fuel. Instead, they are magnetically propelled by electric power fed to coils located on the guide-way.

Working Principle

When the ends of a copper wire are connected to the positive and negative ends of a battery, it creates a small magnetic field. If disconnected from the battery, the magnetic field vanishes. The magnetic field created in this way is the simple idea behind a maglev train rail system. There are three components to this system:

- A large electrical power source
- Metal coils lining a guide-way or track
- Large guidance magnets attached to the underside of the train

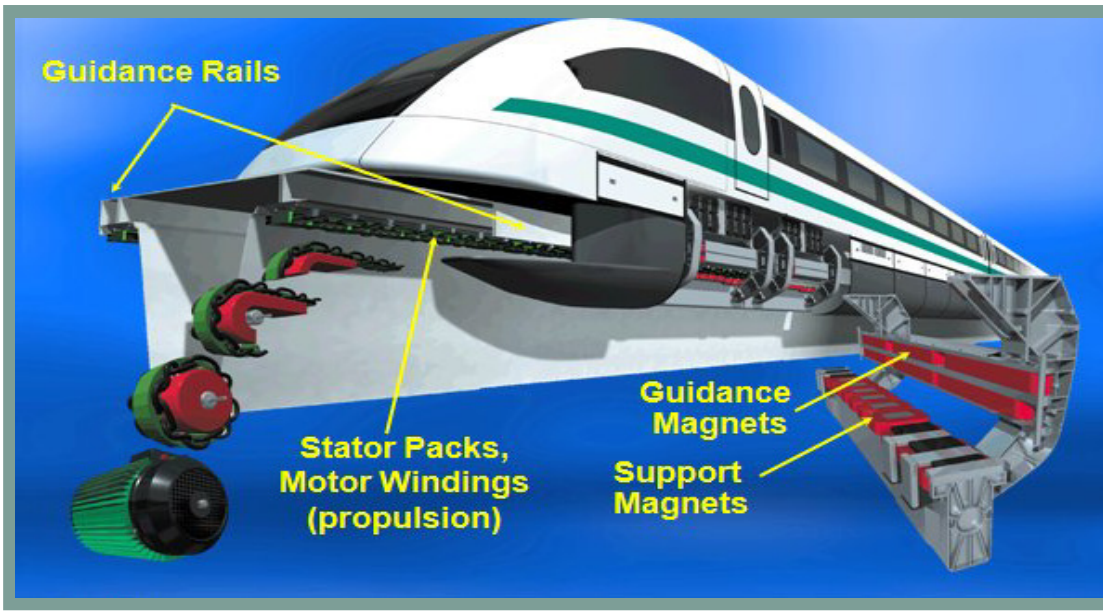
There is a big difference between a maglev train and a conventional train. The maglev trains do not have an engine as used to pull typical train cars along steel tracks. Instead of using fossil fuels, the magnetic field created by the electrified coils in the guide-way walls and the track combine to propel the train. An image of the guide-way for the Yamanashi maglev test line in Japan is shown.

The magnetized coil running along the track called a guide-way, repels the large magnets on the train's undercarriage, allowing the train to levitate between 0.39 and 3.93 inch above the guide-way. Once the train is levitated, power is supplied to the coils within the guide-way walls to create a unique system of magnetic fields that pull and push the train along the guide-way. The electric current supplied to the coils in the guide-way walls is constantly alternating to change the polarity of the magnetized coils. This change in polarity causes the magnetic field in front of the train to pull the vehicle forward, while the magnetic field behind the train adds more forward thrust.

Maglev trains float on a cushion of air, eliminating friction. This lack of friction and the trains' aerodynamic designs allow these trains to reach unprecedented ground transportation speeds of more than 500 kilometers per hour. In Germany, engineers have developed an Electro Magnetic Suspension (EMS) system, called Transrapid which can reach 300 miles per hour (mph) with people onboard. Japanese engineers are developing a competing version of maglev trains that use an Electro Dynamic Suspension (EDS) system, which is based on the repelling force of magnets. The key difference between Japanese and German maglev trains is that the Japanese trains use super-cooled, superconducting electromagnets. This kind of electromagnet can conduct electricity even after the power supply has been shut off. In the EMS system, which uses standard electromagnets, the coils only conduct electricity when a power supply is present. By chilling the coils at frigid temperatures, Japan's system saves energy. However, the cryogenic system uses to cool the coils can be expensive.

Another difference between the systems is that the Japanese trains levitate nearly 4 inches above the guide-way. One potential drawback in using the EDS system is that it must roll on rubber tyres until they reach a liftoff speed of about 62 mph. Japanese engineers say that the wheels are an advantage if a power failure caused a shutdown of the system. Germany's Transrapid train is equipped with an emergency battery power supply. Also, passengers

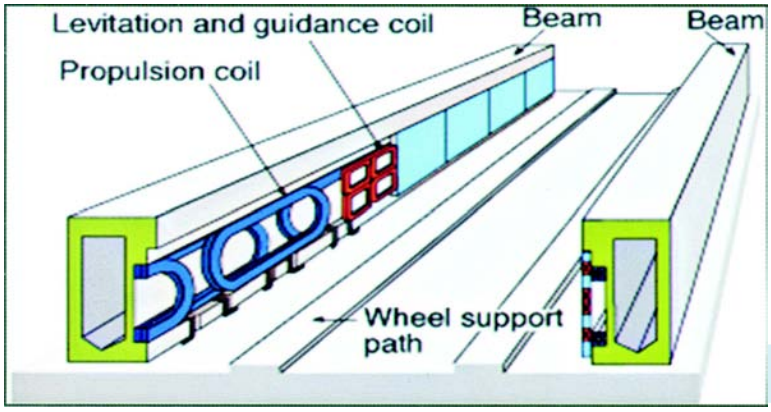
with pacemakers would have to be shielded from the magnetic fields generated by the superconducting electromagnets.



The **Inductrack** is a newer type of EDS that uses permanent room-temperature magnets to produce the magnetic fields instead of powered electromagnets or cooled superconducting magnets. It uses a power source to accelerate the train only until begins to levitate. If the power fails, the train can slow down gradually and stop on its auxiliary wheels. The track is actually an array of electrically-shorted circuits containing insulated wire. In one design, these circuits are aligned like rungs in a ladder. As the train moves, a magnetic field the repels the magnets, causing the train to levitate.

Maglev Technology in Use

Although the technology was first proposed more than a century ago, but the first commercial maglev train made its test debut in Shanghai, China, in 2002 using the train developed by German company Transrapid International. The same line was opened to the public about a year later in December of 2003.



It currently runs to and from the Longyang Road station at the city's center and Pudong airport. It runs at an average speed of 267 mph (430 kmh) and covers the 19 miles (30 km) journey in less than 10 minutes as opposed to an hour-long taxi ride. China is building an extension of the Shanghai line that will run 99 miles (160km) to Hangzhou.

Several other countries have plans to build their own maglev trains, but the Shanghai airport line remains the only commercial maglev line. U.S. cities from Los Angeles to Pittsburgh have had maglev line plans in the works, but the expense of building a maglev transportation system has been prohibitive. Maglev is a completely new mode of transport that has unique advantages over earlier modes of transport and will radically transform society and the world economy in the 21st Century. Compared vehicles—autos, trucks, trains and airplane; it moves passengers at much higher speed and lower cost, using less energy. In addition to its enormous impact on transport, Maglev will allow millions of human beings to travel into space, and can move vast amounts of water over long distances to fulfill the water needs.

Source : Gia Bulletin, 3/14

A dramatic turn around of agriculture, India's most important sector, has gone largely unheralded. Contrary to the popular narrative, agriculture has been transformed in the last 10 years. The second green revolution is underway.

Today, we are not only self-sufficient but have also made steady progress in becoming a feeder to the world. Our farmers are the unsung heroes of this untold story. Life in a village is no longer a cliched bundle of miseries. Emphases on access to credit, higher farm productivity, road connectivity, debt write-offs and remunerative prices have transformed the face of agrarian India. In 2014 alone, agriculture is expected to grow at 4.6 per cent. Our agriculture production of food grains this year is expected to break the 2011-12 record of 259 million tones. More importantly, agricultural profitability has increased over the last decade with record increases in MSPs (minimum support prices for agricultural produce) for all covered crops. MSP increases in the past 10 years, between 2004-05 to 2014-15, vary from about 125 per cent for food grains such as wheat

and paddy to over 200 per cent for pulses like moong dal. These numbers represent the highest rate of MSP increase for any decadal period in our history. The substantial rise in farmland prices across India is proof that the profession of farming is back in vogue. According to Ashok Gulati, the outgoing chairman of the Commission for Agricultural Costs and Prices (CACP), investment in agriculture as a percentage of the agri-GDP has risen sharply from 10-12 per cent in the early 2000s to about 20 per cent by 2011-12. About 85 per cent of this investment has come from the private sector, driven primarily by an attractive price regime and rising profitability in agriculture.

Private borrowings, often at very high interest rates, had been a bane for our farmers as the doors of the financial institutions were never really open to them. Our inclusive growth policies have led to financial institutions lending more than Rs. 7,00,000 crore in 2013-14, a seven-time increase from Rs. 1,04,500 crore in 2004-05. The interest on short-term crop loans has been systematically reduced from a record high of about 12-14 per cent in 2004-05 to a 4 per cent average in 2014-15.

According to the Indian Council of Agricultural Research, electricity consumption in agriculture was about 88.6 gigawatt hours (gwh) in 2004-05. In 2010-11 it had increased to 129.1 gwh, an increase of 45 per cent in six years.

Public sector research institutes and state agriculture universities have developed a large number of hybrid seeds since 2004. As a result, the share of public sector seeds has actually increased vis-a-vis the private sector. But Cotton is a prime example of advanced technology that can substantially benefit farmers. We now produce about 3.5 crore bales of cotton, as against 1.51 crore bales in 2003-05.

Till 2004-05, the net surplus of agricultural trade did not exceed $5 billion in any year since Independence. In 2012-13 alone, our net surplus from agri-exports stood at $21 billion with $41 billion in net exports. The two major national missions, namely the National Food Security Mission and Rashtriya Krishi Vikas Yojana, launched in 2007, have also shown great promise. There is a substantial increase in farmers moving towards higher value agricultural products, such as horticulture and livestock.

The development of rural India is essential for inclusive growth. Only inclusive growth can create a virtuous, self-sustaining economy by building a solid foundation for the future, without which there will be no equity, social justice and stability. We have been able to unlock the economic potential of that section of our population which was trapped in poverty. The revival of agriculture was not an option but an imperative — after all, about 60 per cent of our population depended on it.

Source : Indian Exp. May 9, 2014

MICRO CREDIT

THE ENGINE OF INCLUSIVE GROWTH

The Self Help Groups (SHGs) methodology was first developed in Karnataka in 1992 to link rural population to the formal financial system. Now about 8.6 crore households have access to banking through SHGs.

Linking SHGs with bank finance has been identified as a key tool towards achievement of holistic inclusive growth. Despite the vast expansion of the formal credit system in the country, marginal farmers, landless labourers, petty traders and rural artisans belonging to socially and economically backward classes and tribes whose propensity to save is limited or too small to be mopped up by the banks, continues to depend on money lenders. In order to minimize the dependence on money lenders, NABARD, APRACA and ILO have carried out a study and brought out the concept of SHGs and launched a pilot project supported by refinance. The criteria would broadly be adopted by NABARD for selecting SHGs:

- Membership of the group could be between 10 to 20 persons.
- The group should be in existence for at least six months.
- The group should have actively promoted the savings habit.
- Groups could be registered or unregistered.

What is Micro Credit?

Foreseeing need of sustainable development for the impoverished; Muhammad Yunus, the father of microfinance, popularized the concept of micro credit.

Micro credit, being part of financial inclusion, is defined as the provision of thrift, credit and other financial services and products of very small amount to the poor in rural, semi-urban and urban areas for enabling them to raise their income levels and improve their living standards (as per RBI Master Circular, 2008). In India, the most flourishing testing ground of'social entrepreneurship has been in the area of micro credit, and more recently microfinance. Culling from international literature empirical features of micro credit are:

- Quantum of loans is small,
- No collaterals are required,
- Rural and urban poor are the major borrowers,
- Ideally loans are used for income-generation through market-based self-employment,
- Loans are administered through borrower groups,
- Owing to NGOs' controlling disbursement as well the basic terms and conditions for sanction, they sometimes become private transaction.

Why Micro Credit?

Providing credit is the top priority for policy makers to achieve inclusive growth. Unless we are able to meet the credit needs of our people, we can never hope to grow in a sustainable way. Despite multiple agencies giving credit to the rural sector, the critical gap in rural credit still exists resulting in the exploitation of the rural masses by money lenders. The status of micro credit is as follows :-

- Considerable gap between demand and supply for all financial services.
- Majority of poor are excluded from financial services.
- About 56 per cent of the poor still borrow from informal sources.
- 70 per cent of the rural poor do not have a deposit account.
- 87 per cent have no access to credit from formal sources.
- Less than 15 per cent of the households have any kind of insurance.

- Bankers feel that it is fraught with risks and uncertainties.
- High transaction costs.
- Unfavourable policies like caps on interest rates which effectively limits the viability of serving the poor.
- Lack of an appropriate legal vehicle.

Frame work for Micro Credit

In India, there are two routes through which micro credit is provided to borrowers. The first is the "Bank SHGs linkage programme" by which National Bank for Agriculture and Rural Development (NABARD) and commercial banks promote the formation of SHGs. Banks lend directly to SHGs, which, in turn, open group savings accounts in the banks. The second route is the "Micro Finance Institute (MFI) model", which is the most important institution in the chain.

The SHGs-Bank Linkage Programme

In 1991-92, a pilot project for linking about 500 SHGs with banks was launched by NABARD in consultation with the Reserve Bank of India. Since launching it as pilot project, it has proved its efficacy as a mainstream programme for banking by the poor who mainly comprise the marginal farmers, landless labourers, artisans and craftsmen and others engaged in small business like hawking and vending in the rural areas.

MFI Model

Microfinance refers to a movement that provides low-income households a wide range of financial services, including not just credit but also savings, insurance and fund transfer. The Indian MFIs are among the fastest growing sector and most efficient in the world today and will continue to develop into an important delivery mechanism to reach out to the poor and empowering women. The role of MFIs is to enhance human capital and to evolve the bankable clients to make poverty irrelevant.

SHGs-bank linkage programme and MFIs model have become an important alternative to traditional lending in terms of reaching the poor and will continue to be an important delivery mechanism as: -

- Poor people need not just loans but also savings, insurance and money transfer services.
- Microfinance must be useful to poor households: helping them raise income, build up assets and/or cushion themselves against external shocks.
- Subsidies from donors and government are scare and uncertain, and so microfinance must reach the large numbers of poor people.
- Microfinance means building permanent local institutions.
- Microfinance also means integrating the financial needs of poor people into a country's mainstream financial system.
- The key bottleneck is the shortage of strong

institutions and managers.

- Donors should focus on capacity building.
- Interest rate ceilings hurt poor people by preventing microfinance institutions from covering their costs, which chokes off the supply of credit.
- MFIs should measure and disclose their performance — both financially and socially.

What is needed to be done?

Micro credit institutions should fund their loans through savings accounts that help poor people manage their myriad risks. Governments should provide an enabling legal and regulatory framework which encourages the development of a range of institutions and allows MFIs to operate as recognized financial intermediaries subject to simple supervisory and reporting requirements. Usury laws should be repelled or relaxed and MFI should be given freedom of setting interest rates and fees in order to cover operating and finance costs from interest revenues within a reasonable amount of time. MFIs on their own are unlikely to be able to address formidable challenges of underdevelopment, poor infrastructure and governance. It needs : -

- Appropriate legal structures for the structured growth of microfinance operations.
- Ability to access loan funds at reasonably low rates of interest.
- Appropriate loan products for different segments.
- Ability to innovate, adapt and grow.
- Bring out a compendium of small and micro enterprises for the microfinance clients.

- Ability to attract and retain professional and committed human resources.
- Identify and prepare a panel of locally available trainers.
- Ability to train trainers.
- Capacity to provide backward linkages or create support structures for marketing.
- Finding adequate levels of equity for the new entities to leverage loan funds.

Micro credit is not yet at the centre-stage of the Indian financial sector. The knowledge, capital and technology to address these challenges, however, now exists in India, although they are not yet fully aligned. With a more enabling environment and surge in economic growth, the next few years promise to be exciting for the delivery of financial services to poor people in India. Micro credit will continue to develop into an important delivery mechanism to reach out to the poor and achieving financial inclusion and empowerment of women. Its role in enhancing human capital is considerable. The objective of the micro credit initiatives must be to evolve the bankable clients to creditworthy clients, thus making concerns about poverty irrelevant.

Source : Cosidici, 5-6/13

Opportunities & Challenges Wind Power

- Alok & Srivastava

The wind power segment has witnessed a slowdown in the past few years as the overall economy was not performing strongly and due to the withdrawal of the accelerated depreciation (AD) scheme with effect from April 1, 2012. Despite these hiccups, the industry has done reasonably well in the past two years. Independent power producers (IPPs) have been driving the capacity addition. In 2013-14, the total capacity addition in the segment is likely to reach 2,000 MW.

The AD was withdrawn because the MNRE felt it would encourage companies that were investing in wind power with the main purpose of availing of AD benefits to shift to the generation-based incentive (GBI) scheme. However, the move has not yielded positive results. Therefore, there is a need to reinstate the AD scheme.

The MNRE has been working with the Ministry of Finance (MoF) to ensure this. The Planning Commission and the MoF have realised that several investors including some large PSUs are interested in setting up projects under the AD scheme. The MNRE expects the MoF to approve the reintroduction of the AD scheme.

The MNRE is of the view that the wind power segment is poised for significant growth. According to industry estimates, the country's wind power potential is over 700 GW. The Centre for Wind Energy Technology (C-WET), the Centre for Study of Science, Technology and Policy and the Shakti Foundation have recently undertaken a study to reassess the wind power potential in four states and the actual potential is significantly higher.

However, a factor that may impact investor interest is the uncertainty regarding resource

availability. At present, C-WET conducts assessments at potential wind sites, but the process is slow due to the organisation's limitations.

Considering this, the MNRE is planning to introduce a scheme under which more private players (besides developers) will be encouraged to undertake wind resource assessment at a particular location. The data collected will be reserved for them for three years and the companies can sell it to developers and engineering, procurement and construction (EPC) contractors.

Further, the ministry will contribute 40 per cent of the estimated cost of the project. The scheme will encourage a new set of players to enter the wind power industry and provide various services. After three years, developers will be required to share the resource assessment data with the state nodal agency, following which it can be sold to a developer or an EPC contractor.

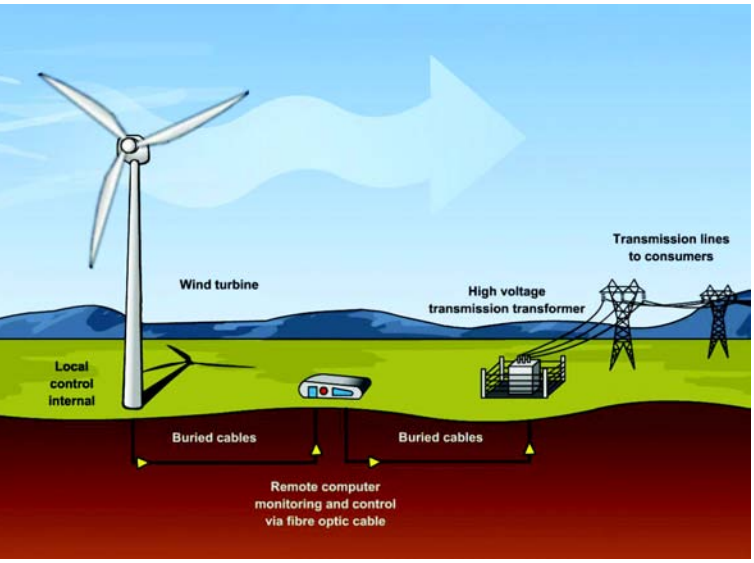
Meanwhile, there is also a need to ensure consistency at the policy level. At the central government level, the GBI scheme has been reinstated while the reintroduction of the AD scheme is being worked out. While the central government has an important role to play in providing policy support, its implementation has to be driven at the state level. The Andhra Pradesh government has set up a task force, which has proposed to introduce a single-window clearance mechanism. Similar steps should be taken by other states to facilitate wind power development.

On the regulatory front, there have been several concerns related to the Renewable Regulatory Fund mechanism. While the penalty clause has been suspended for the time being, the MNRE believes that balancing, forecasting and scheduling have become necessary.

In Tamil Nadu, for instance, 30 per cent of the wind power capacity was forced to back down due to unavailability of evacuation infrastructure. Also, there were concerns that the grid would destabilise if additional power is transmitted. Unavailability of the grid impacts the overall economic viability of projects. As a result, balancing, forecasting and scheduling become an essential part of the wind integration process.

In this regard, lessons can be learnt from the experience of other countries. For instance, in Europe, there are specialised companies that offer forecasting and scheduling services. These services are not very expensive and several foreign companies have shown interest in offering these services to the Indian wind power industry.

One way for small developers to achieve balancing would be through integration of power generation. Aggregation of sites would reduce the share of prediction errors considerably, thereby leading to improved balancing. While this set-up may not



require pumped storage plants per se, a large number of wind farm developers can develop these facilities without government support.

Meanwhile, the government is implementing the Green Energy Corridors project to improve grid infrastructure and evacuation networks for renewable power. The ministry had awarded the project to Power Grid Corporation of India Limited (Powergrid) in 2011. Powergrid has estimated that Rs 430 billion would be required for strengthening the grid and enable it to absorb the growing renewable energy capacity. However, the ministry and state governments have estimated an investment requirement of Rs 320 billion towards this over the next five to six years, considering that several state governments have already initiated some of the projects that were part of the initial green corridors proposal.

To fund this project, German development bank KfW will provide loans of up to Euro 1 billion over the next five years. About Rs 90 billion has already been committed by the bank and Rs 90 billion will be provided through equity investment. Another Rs 60 billion will be sourced from the National Clean Energy Fund. The MNRE has also received proposals for funding the remaining project cost.

Meanwhile, renewable energy management centres will be established. These centres will be set up under the jurisdiction of the state load despatch centres for tracking renewable energy generation in real time.

A key concern for developers is that wind turbine costs are not reducing. However, the MNRE believes that the cost of turbines manufactured in India is 30 per cent lower than that of turbines produced in foreign markets. Further, the cost per unit of energy produced is a more important parameter than the turbine cost. The capacity utilisation factor of new turbines is 25 per cent as compared to 15 per cent for the previous models. As a result, the per unit cost of energy with new turbines is significantly lower than that associated with previous models.

Another issue for the wind power segment is the use of the competitive bidding process for capacity allocation. The market has developed through the feed-in tariff (FiT) route. Preferential tariffs are determined by the state electricity regulators. The ministry believes that competitive bidding in wind power will not be feasible as it has been in the solar segment because the former is at a different stage of development. Reverse bidding

in the case of solar power was justified for reducing tariffs from Rs.16/- to Rs.17/- per kWh levels. Meanwhile, there was a steep decline in solar PV panel prices globally, which allowed developers to quote lower tariffs. However, this cannot be replicated in the wind power segment.

There is a need to educate the proponents of competitive bidding that this process will not provide returns that are achieved through the FiT route. Already, the FiTs offered by states are not high.

Moreover, several states have not revised their FiTs for many years and some have revised tariffs after several years. As a result, there is no guarantee that competitive bidding will result in lower tariffs. It is also possible that due to aggressive and excessive bidding, the final tariffs may not be viable.

There are issues in competitive bidding as resource data is not available. In addition, as the majority of the land is not owned by SNAs and discoms, the competitive bidding route does not make commercial sense.

Moreover, international experience confirms that competitive bidding has not been successful. For instance, the Brazilian government had allocated wind projects through this route. All these projects are now facing delays. Consequently, there is a strong need to educate the stakeholders about the implications of competitive bidding.

Considering the issues regarding competitive bidding, the MNRE has asked the Ministry of Power (MoP) to amend the tariff policy. The MNRE has suggested to the MoP that competitive bidding in wind power is not feasible as the costs realised (lower capacity addition) through such a process outweigh the benefits (lower tariffs). In fact, the MNRE believes that the state governments may not even be able to realise the benefits of competitive bidding at some wind sites. The MoP will now take a final call on the issue following a discussion with all the stakeholders.

Overall, the wind power segment has performed well and investor confidence is high. The MNRE expects the wind power industry to contribute 15,000 MW of capacity for achieving the targetted 30,000 MW of renewable energy capacity addition during the 12th Plan.

Source : Power Line, Vol. 18 No. 7

SURVEY ON ENERGY CONSERVATION AWARENESS

USING KNOWLEDGE, ATTITUDE & PRACTICE (KAP) METHODOLOGY

National Productivity Council (NPC) had been assigned the study to undertake the baseline survey on Energy Conservation using the KAP methodology for the State of Himachal Pradesh (HP). The survey covered the extent of energy conservation across various consumer segments viz. farmers, households, students, small-medium and large industrial units across the State. An interdisciplinary team from the Energy Management Information Technology, Economic Services and groups of NPC carried out the study.

The standard KAP methodology adopted had helped to delineate the various aspects involving the knowledge, awareness and practices (KAP) on energy conservation and energy efficiency prevailing among different segments and sub-segments of energy consumers in the State of HP. Both primary and secondary methods and web based online tools were used to collect structured data from the target consumers.

The study observed that Himachal state has the conservation potential for about 10 per cent total energy, namely 660 million units (approx.) annually, through practices involving awareness generation. It has been observed that the level of knowledge pertaining to energy conservation is considerably on the higher side across industry groups and other category of consumers like commercial establishments, non-commercial & non-domestic. However, in terms of attitude and practice, there is a wide gap in application of this conservation knowledge. This is more evident among the small and medium industry groups, households, agriculture users and commercial establishments.

The findings of the study was disseminated through a workshop for all stakeholders, consisting of Govt. executives, industry entrepreneurs, machinery manufacturers, energy consultants etc. The study was the first of its kind where the KAP methodology was successfully used to identify scope of improvement in Energy Conservation in the different consuming sectors of the State. The success of the study has shown that similar methodology can be utilized by other states to strategies their Energy Conservation schemes.

Affinity Diagram

What is an Affinity Diagram?

An Affinity Diagram is a Brainstorming tool that can help a group generate a large number of ideas individually and then cluster the individual thoughts into groups of related ideas.

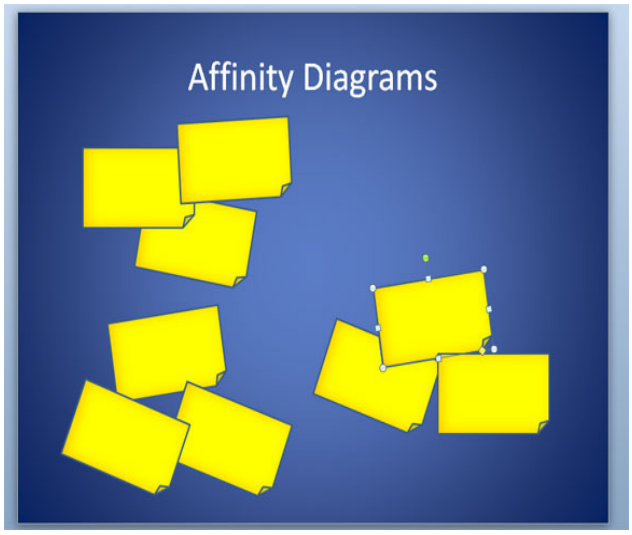
The KJ Method is a specific approach to an Affinity Diagram, which was developed in Japan by Dr. Jiro Kawakita. It is a very effective way of reaching consensus in group decisions, especially on controversial issues.

The steps for conducting an Affinity Diagram session follow.

a) Select a group facilitator who is neutral to the issue and knows the Affinity Diagram methodology.

b) Invite the right people, including all interested parties. This could be your GP Team and others as appropriate.

c) Clearly present the issue to be discussed in a full sentence. It can be phrased as a statement or a question.



d) Have each individual write down a number of ideas. 20 is a good number. A rule of thumb is that the number of ideas generated should be equal to 1.5 times the number of people. Ideas should be descriptive, but concise, and should include both a noun and a verb. Between 5 and 7 words is sufficient.

e) Have the individuals share their ideas with the group, allowing for clarification but NO judgements about the ideas. After two rounds through the group you can ask if there are more, different ideas to be contributed.

f) Have your GP Team place the ideas in different categories. Don't restrict the number, but it will usually be around five. During this stage, no talking is allowed between the participants, but no restrictions are applied to the number of times an idea can be placed/ removed from any category.

g) Write headings for each category.

h) If the group is large, consider sub-dividing into small groups of three or four (or more) and have them write in readable language a couple of paragraphs that express the ideas in one category. If the group is small, then have the whole group work on one category at a time.

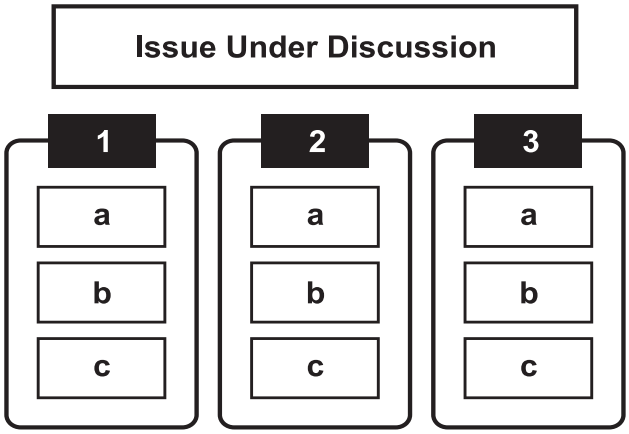
i) Share the results with the group as individuals and

see if any modifications are needed. This step might not be necessary if the group worked together in the last step.

TIP Today there are many software programmes that can help create an Affinity Diagram. However, the best tools continue to be sticky notes such as Post-It notes, file cards, a stack of paper made from recycled stock, a roll of tape, and thick non-toxic markers of different colours. The focus should be on the exercise, not the technology.

Why is the Affinity Diagram useful?

The Affinity Diagram is useful in helping the group step out of individual positions and creating a group position on an issue. This is done by motivating lateral thought instead of linear thought. The absence of speech reduces the potential for rock logic. It promotes cooperation amongst GP Team members. It can help break through longstanding communication barriers.



How will the Affinity Diagram help you?

The Affinity Diagram is one of the most simplest and efficient techniques for making group decisions. By using neutral statements you can encourage consensus.

Where do you apply the Affinity Diagram?

The Affinity Diagram can be applied to any group that has different stakeholders involved in decision-

making. It fosters the most important outcome - a group decision, and does not allow the precise balance of the participation of group members to slow the process.

When is the Affinity Diagram useful?

The Affinity Diagram is useful when you need a good understanding of a complex problem and an efficient decision from a group where the stakeholders have different opinions and there is no obvious middle ground.

Who benefits from the Affinity Diagram?

The GP Team benefits from this tool to overcome "team paralysis". Further, the whole organization benefits from regular use of the Affinity Diagram as it helps employees feel empowered to resolve issues themselves.

Ponder Point - User Notes

Should you involve people outside your organization in your GP programme if they benefit by your efforts? List up to 7 people that you might wish to involve. An outside opinion can offer a new perspective, and identify opportunities for improved GP that may not have been considered within your organization.

Air Emission Control

What is Air Emission Control?

Air Emission Control is the collective name for methodologies and technologies that aim to reduce or eliminate pollution caused by an

organization's emissions into the atmosphere. Air emissions do not respect organizational, property or political boundaries.

TIP Air emissions can be categorized as "sensible" pollutants - detected by human senses or as "insensible" pollutants - not detected by human senses. The latter can occur because its existence is a trace amount, or it has no detectable odour, taste or colour. Believing that air emissions are under control because nobody complains can be a mistake of unpredictable consequences for the organization.

Why is Air Emission Control useful?

Air emissions of any kind are an indication of inefficiency. Their presence is contrary to the objective of Green Productivity as air emissions are uncontrolled. Control of air emissions is a way to achieve your GP objectives and targets regarding air pollution. If well-planned and implemented, it can also be a way of recovering valuable resources from waste streams. Air emissions can manifest as particulate matter or gaseous pollutants.

How will Air Emission Control help you?

Air Emission Control will also help you to meet your GP commitment to continuous improvement. Air Emission Control is also useful because it can facilitate compliance with air pollution legislation and regulations, and is often a good mechanism to help meet or exceed workplace health and safety standards.

Where do you apply Air Emission Control?

Air Emission Control can be applied to any emission the organization sends to the atmosphere. However, those emissions containing valuable materials such as products or useable raw material should be addressed with priority, since their control can help finance other Air Emission Control programmes. Techniques for Air Emission Control can include:

- Industrial Boiler emissions
- Acid Bath Fumes
- Chemical Odours
- Gravitational settlers
- Cyclonic collectors
- Bag filters
- Wet scrubbers
- Electrostatic precipitators
- Adsorption towers
- Adsorption columns

TIP One kind of air emission is referred to as fugitive emissions. These emissions are not fully controlled, but in most cases are not accidental. Examples of fugitive emissions are leaks from gas pipelines and valves, venting and flaring of gases, methane emissions from coal seams and vapour given off by petroleum stores.

When is Air Emission Control useful?

Air Emission Control is useful when the emissions of an organization are out of control or poorly understood. It can also be helpful to foster improved results when the expected results for your GP programme are not being achieved.

Who benefits from Air Emission Control?

Air Emission Control reflects directly on the economic

health of your organization, and on legal and social compliance. Not only does your whole organization benefit from better Air Emission Control, your workers and the community in which you operate also benefit.

What is Adult Learning ?

Adult Learning encompasses strategies that enable adults to learn. There are differences that should be understood between how adults and children learn. The basic concepts to be considered are :

a) Adults learn more efficiently when they are actively involved in the decision-making about the management, content, style, and delivery of their learning.

b) Adult learning is fostered through a curriculum and methodology that involves collaboration between the teacher and the learner.

c) The individual learner is the focus of adult learning.

d) Adult learning acknowledges the experience, skills and knowledge brought by adults to the learning setting, and

e) Adults are capable of learning throughout life.

TIP Even though there is great debate among psychologists and educators about Adult Learning, it is generally accepted that adults learn from their peers as much as kids do. When the focus of Adult Learning is much more individualized, it creates the opportunity where the adult student evolves to a better level of understanding. This is incentive for achieving the desired learning.

Why are Adult Learning strategies useful?

All members of your GP Team are likely adults if the organization is a business or public sector organization. Pretending that adults can be taught like school-aged children is not effective. For an adult Learning programme to be successful it must consider the needs and wants of the adult learner.

There are five steps involved :

1) Conduct a needs analysis.
2) Set objectives.
3) Design the programme (content, format, logistics, timing, duration, etc.).
4) Implement the programme.
5) Evaluate the training against the objectives.

How will Adult Learning strategies help you ?

Training is an expensive and time-consuming undertaking if it is not designed to meet your specific

needs. Applying Adult Learning techniques will help you to make the most of your efforts by providing the culturally appropriate approach for the development of training and awareness programmes, tailored to adults, that are needed to make your GP programme successful.

In the design phase, think of the learning process from 3 perspectives :

- From the needs of the organization for the GP programme to be successful.
- From the designer's perspective on details of the learning process.
- From the needs of the adult learners.

Pre-testing the learner's needs can be done by simply asking them to complete statements such as :

1) This learning process will be successful for me if it:

2) I find the most difficult thing about training programmes is :

3. The workshop leader can best remedy this by:

4. During the training programme, I would like answers to the following questions:

5. The most important thing I would like to learn is:

6. My academic background/work experience is in:

In addition, you can get your GP Team to benchmark what they know about specific topics. This self-assessment can be repeated after the Adult Learning process so that each member can understand how much more they know about a subject that can affect the success of your GP efforts. A downside of traditional training is that it is often not integrated into the business strategy of the organization, or it fails to provide the right connections at the level needed. The five steps involved in Adult Learning tell you what to do, not how to do it. Aligning it to the culture of your organization is up to you.

Where do you apply Adult Learning strategies?

You apply Adult Learning techniques when you need to design training or awareness programmes for your GP Team, and for expanding the benefits of GP throughout your organization, along your supply chain or into your community.

When are Adult Learning strategies useful?

Adult Learning is useful whenever there is a need for an increase in knowledge, an improvement in skills or enhancement of attitude in your GP Team.

Who benefits from Adult Learning?

Adult Learning benefits everyone involved in the training programme:

- programme designers have a better idea of how to increase the value and effectiveness of learning,
- teachers understand what the learners need to know, and
- students are more likely to buy into the learning process and be more confident as their involvement was secured in the process of programme development.

The results of effective Adult Learning obviously benefit your whole organization. The organization will be better able to foster improvement, and will make the most of its investments in training and awareness.

Additionally, the enthusiasm and satisfaction of the learners can spread to others who could eventually be involved in the system of change that GP fosters. Enthusiastic adult learners are good champions for

change within your organization, they can also be ambassadors of GP within their community.

Ponder Point - User Notes

Adults learn through accidents, by making mistakes or through humour. Humour can be used in conjunction with examples of accidents and mistakes to enhance learning.

The reaction to the type of humour used is dependent on a number of variables such as gender, age and culture.

While Adult Learning is a serious matter, injecting humour into the learning process can have a positive physical reaction and provide business benefit. .Research has shown that people's problem-solving abilities yield better results when they are preceded by laughter.

12 Things You Can Do on Climate Change

Use efficient lighting

Replace incandescent bulbs with compact fluorescents (CFLs). These use four times less energy and they last eight times longer. So you not only cut your electricity bills dramatically, you also save a lot of money on buying bulbs.

Use energy efficient electric appliances

They use two to 10 times less electricity for the same functionality and are mostly higher quality products that last longer than the less efficient ones. In short, efficient appliances save you lots of energy and money. In India, appliances like refrigerators and ACs have efficiency rating labels ranging from 1 to 5 stars, the higher numbers being more efficient.

Use an energy efficient computer

Buy a laptop instead of a desktop. It consumes five times less electricity. If you buy a desktop, get an LCD screen. Enable the power management function on your computer, the screensaver does not save energy. Check if your computer supports the more advanced speedstep power management. Switching off a computer extends its lifetime, contrary to some misconceptions. Minimise printing and print on both sides of the paper. Laser printers use more electricity than inkjet printers.

Drive l ess

Walk, bike, carpool or take public transport. You'll save 1.5 kg of carbon dioxide for every 5 km you don't drive. Use cars that run on cleaner fuels such as CNG and LPG. Switch Off your car if you want to stop for more than two minutes.

Check your tyres

Keeping your tyres inflated properly can improve the fuel efficiency of your car. Every litre of petrol saved keeps 2.5 kg of carbon dioxide out of the atmosphere. Using radial tyres will help you save three to seven percent of fuel.

Use water carefully

Don't waste water. Use a mug of water when brushing your teeth, shaving or washing your hands and face. Instead of a shower or tub bath, use a bucket. Try to harvest rainwater in your locality. It takes a lot of energy to heat water - use less hot water and use efficient heating appliances.

Say no to plastic

Take a cloth bag with you when shopping. Use recycled paper. Avoid products with a lot of packaging.

Move your air-conditioning thermostat up two degrees

You could save about 900 kg of carbon dioxide a year with this simple adjustment. Set the thermostat of the room air conditioner at 25^{0}C to get the most comfort at the least cost.

Use renewable energy

Sunlight can be used in many different ways to save energy. Use a solar water heater instead of an electric geyser. A 100 litre solar water heater can save around 1500 units of electricity every year. For lighting use batteries that can be charged with sunlight. A solar cooker cooks rice and vegetables without losing their essential nutrients. Just leave the solar cooker outside in the sun to cook your food. If you live in a village, you can use biogas from cow-dung to save energy.

Plant more trees

A single tree will absorb one tonne of carbon dioxide over its lifetime.

Turn off electronic devices

Simply turning off your television, stereo, computer, fans, lights when you are not using them will save thousands of kilograms of carbon dioxide emissions a year.

Reuse & recycle

Recycling and re-using products like paper and bottles will help protect the environment. Use recycled paper. Recycle your office and household waste.

Sources : APO Guide & United Nations Development Programme, India

Ministry of Micro, Small and Medium Enterprises (MSME), Government of India launched the Lean Manufacturing Competitiveness Scheme in July 2009 on pilot basis in 100 clusters spread across the country. The objective of the scheme was to improve the manufacturing competitiveness of MSME sector by applying Lean Tools and Techniques.

National Productivity Council (NPC) was assigned the role of monitoring and implementing agency for the scheme. The pilot project has been completed successfully and the upscaled version of the scheme to cover 500 clusters has been initiated in the 12th Five Year Plan. Given below are couple of case studies from the pilot phase."

CASE STUDY-I

(AUTOMOBILE PARTS)

M/s India Industries is manufacturer of automobile parts. They manufacture & supply components like bar stock, machining cold forged/hot forged parts, fasteners, fulcrum pins, pull rod, clevis and other parts using state of the art CNC turning centres, single pindle automats, centreless grinders, thread rolling machines, milling machines, surface grinders and drilling machines. Both ferrous and non-ferrous raw materials are used with main focus on steel grades. The core processes are CNC turning, milling, drilling grinding & thread rolling. The unit was established in the year 1985 and the number of employees is 112. Current turnover of the unit is approx. Rs. 10 crores. The major customers are Greaves Cotton India Ltd & Brakes India Ltd.

Lean Journey

During the diagnostic study, it was found that setup changes were done frequently as the number of components produced was high but the production batch size was small. The time taken for setup changes considerably reduced the time available for production while also increasing the cost of the cutting tools.

Lean Tools Used : SMED, Kaizen

To address the above mentioned issues the unit selected two projects:

- Set-up time reduction
- Cutting Tool cost reduction

A separate Lean team was formed to work on each of the projects.

(Photographs of some of the products)

The set up time data of all machines for period of one month was collected. The machines were categorised into 3 different categories based on setup time & number of set-ups in a month. The total set-up time per month for all the 3 categories of machines was found to be 6800 minutes. It was observed that various activities were done after the set-up time was high. Root causes were identified and action plans were developed to address the concerns.

The team then observed and studied the above action plans for a period of 1 month and analyzed the results. A reduction in setup time was observed as the setup time reduced to 5440 minutes, saving 1360 minutes in a month.

For the second project on reducing cutting tools' cost, several kaizens were evolved. The cutting tools cost data for a period of 7 months was collected which was approx. Rs. 72,707/- per month. Cost details and the quality used for each tool which contributed to a major portion of the total cost was identified. It was observed that the inserts' types of tools had the maximum contribution towards the cost of tools. The cost of all tools of inserts type was collected and tabulated. Tools which were identified with highest cost were TNMG160408 VM NC3120 and TNMG160404 VM NC3120. Analysis was carried out to identify the concerns of these tools. Brainstorming was done among the team members to find out the probable causes for high tool consumption. Action plan was worked out to address various concerns. Tool life monitoring chart was designed to keep track of tool usage. The savings per Year had been estimated to be around Rs. 50,469/-.

5S implementation was taken up to bring in a culture of cleanliness and good housekeeping which improved visual appearance of the shop floor.

No.	Activity	Concern	Action Plan
1.	Bringing tool from store	Tool Searched & Brought from store after starting setup change	Tool to be brought from store before starting setup change
2.	Bringing Drawing from QC area	Drawing brought from QC area after producing first piece	Drawing to be brought from QC area before starting set up change
3.	Bringing raw material from store	Raw material brought from store after starting set up change	Raw material to be brought from store before starting set up change
4.	Bringing measuring instrument from QC area	Vernier brought after producing first piece	Measuring instrument be brought before starting setup change.

Setup Time Reduction

5S Implementation

Overall Benefits
20% Reduced setup time.
Over all tool cost reduced by 5.5% per month.
110 Kaizens were evolved, estimated savings was Rs. 40000.
Annual Saving of Rs. 1.50 Lacks.

CASE STUDY-II

(Food Processing)

Type of Unit : Medium

The unit M/s. Madhav Agro Foods Pvt. Ltd. was established in 1993 in the green belt of Padra District Near Vadodara in Gujarat, where fresh fruits and vegetables are available in abundance. The unit is a manufacturer & supplier of Pickles, Paste & Chutney. The company is among the first in India to implement ISO and HACCP (Hazard Analysis and Critical Control Point) in 2001 and was internationally recognized for Quality & Food Safety Systems. Currently the unit is accredited with ISO 22000:2005. The sales turnover of the company is about Rs. 5 Crores and it employs around 80 people. The unit supplies over 300 recipes to North America, Europe, Australia, Middle East and Africa under various private labels.

Lean Journey

Keeping in mind the nature of the industry, the unit was requiring a Lean system to avoid losses due to waiting, contamination, transportation etc. The raw material and WIP, being perishable commodities, could not afford any delay in processing. Though the unit was certified with well recognized QMS and it maintained quality assurance practices, yet need was felt to have a system to check quality issues and the losses at source of generation. There was waiting time loss due to lower efficiency of filler machine. Also, the Shrink tunnel and filling Machines were having breakdowns resulting in lower efficiency. Since the WIP and packing material inventory was high and ITR was low (4.33), it required better production planning. Traditional practices were largely followed all over the unit. There was no schedule followed for cleanliness and housekeeping was done in unplanned manner Delivery compliance was very low. There was no system of "Suggestions Scheme" or "Shop Floor Meeting" to solicit suggestion or feedback for continuous improvement.

"We Highly appreciate your support and experience in implementing Lean Projects. We Shall sustain these practices."

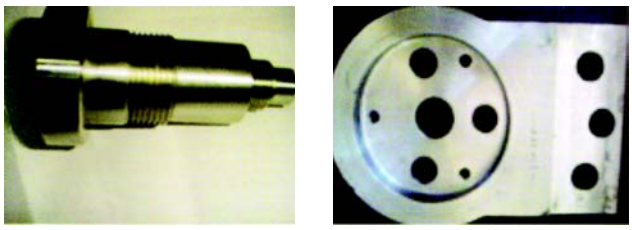
Lean Tool Used: VSM, 5S, Visual Management, Inventory Turnover

During diagnostic study it was assessed that the plant had a large opportunity to reduce or eliminate many wastes through 5S. Therefore, Packing and filling section were selected as the pilot areas. Lean awareness training was conducted to the core management group along with training sessions on 5S, Kaizen and Visual control for the Packing and filling sections followed by implementation of 1 S (red tagging)-2S (PEEP)-3S (Cleaning). Subsequent audits reflected remarkable improvement in visual management, reduction in loss of production time,

reduction in inventory etc.

It was found that the unit frequently fell short on delivery compliance. Also, the inventory levels were high for most of the items. The probable reasons identified were as follows.

- Inadequate raw material received from vendors
- No min-max defined for most of the items
- Economic lot quantity not followed

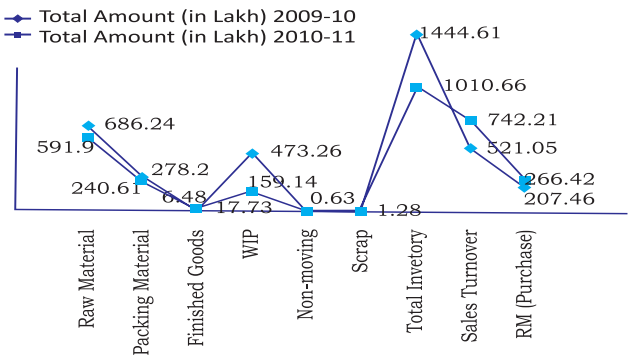


(Photographs of some of the products)

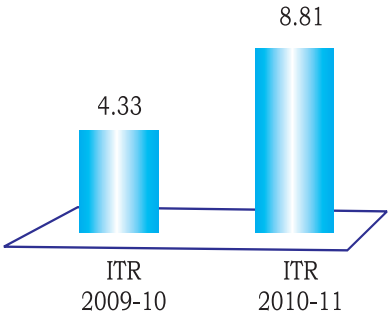
- Space constraints for stocking RM and FG
- Packing materials were being procured more than the lot-size

A Value Stream Map was made showing the top level value chain processes for key products. Also, the PPC (Production Planning & Control) process was studied in detail including the dispatch data, supplier lead times, shipment size and production batch size. The min -max levels at RM - WIP -FG level were established. The change over time for the bottleneck processes was reduced. PPC was planned and followed scientifically.

The above activities resulted in remarkable reduction



Inventory & Sales



ITR for the year 09-10 and 10-11 showed that the ITR had increased to 8.81 from 4.33.

Inventory turnover

Overall Benefits
55 Score - 90% on 100 % scale
Increase in Labour Productivity - 27%
Improvement in inventory Turnover - 103%
Overall Equipment Efficiency (OEE) Improvement - 85%
Annual Savings estimated - Rs. 42,00,000/- per year

in WIP and total inventory while increasing the delivery performance and sales turnover.

The OEE of pickle filling machine was 27% and it required a deployment of 14 persons instead of 9 persons due to the bottleneck operation of filling process. No CLIT (Clean-Lubricate-Inspect-Tighten) standards were in practice. Therefore, data was collected and analyzed through Why-Why analysis of abnormalities/Breakdown, Fault tree analysis, Cause and Effect Diagram etc. and the 'corrective and preventive actions' (CAPA) were incorporated into CLIT sheet. A comprehensive CLIT sheet was prepared and implemented. Through all these measures, the OEE increased from 27% to 47% resulting in an estimated benefit of Rs. 6.6 lacs per annum.

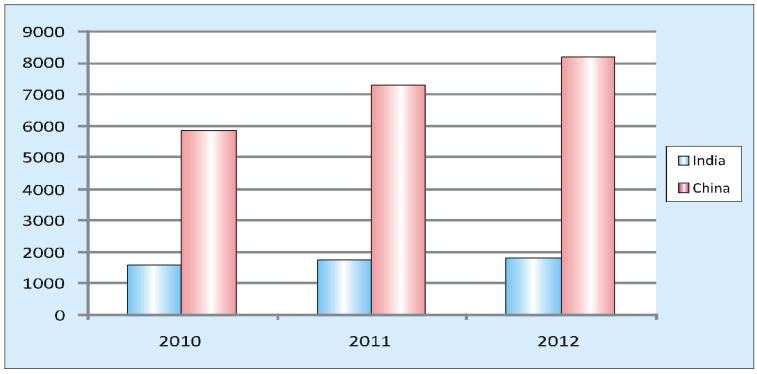
ECONOMIC & BUSINESS COMPETITIVENESS FACTORS : INDIA V/S CHINA

Economic Factors

Gross Domestic Product

(US $ billions)

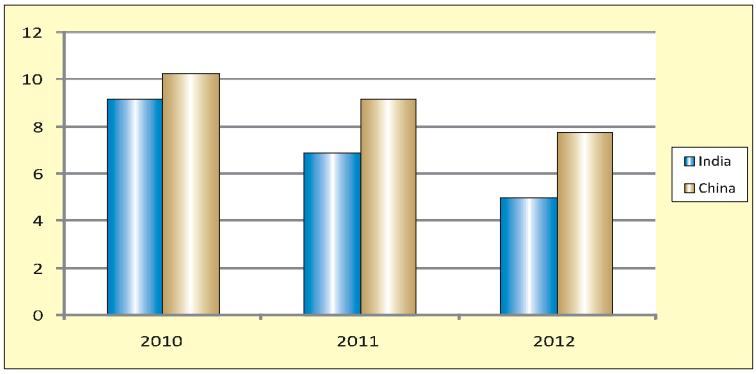
Country	2010	2011	2012
India	1587.00	1756.80	1856.00
China	5878.40	7298.10	8227.10



Real GDP Growth

(% age change, based on national currency in constant prices)

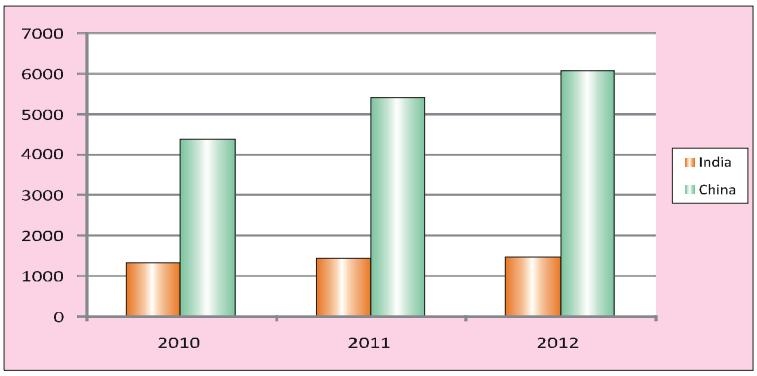
Country	2010	2011	2012
India	9.2	6.9	5.0
China	10.3	9.2	7.8



Gross Domestic Product Per Capita

(US $ per capita)

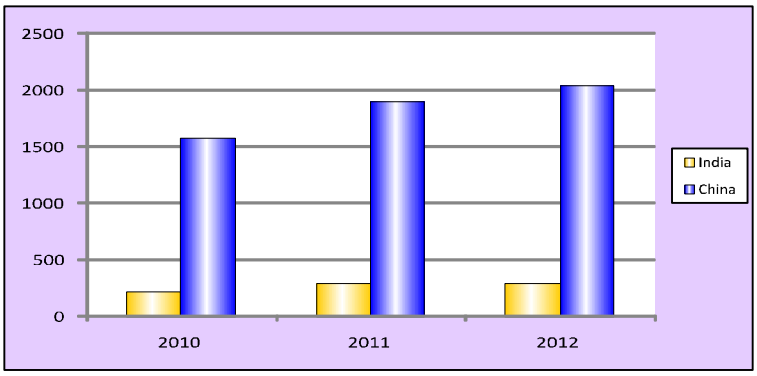
Country	2010	2011	2012
India	1333	1452	1506
China	4384	5417	6076



Exports of Goods

(US $ billions)

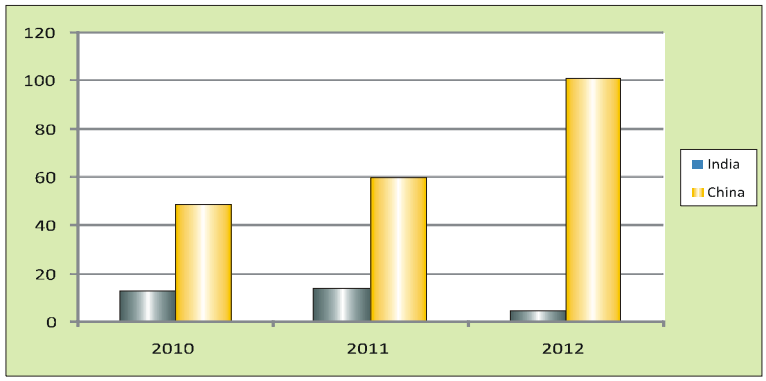
Country	2010	2011	2012
India	216.16	296.56	293.21
China	1577.82	1898.60	2048.81



Direct Investment Flows Abroad

(US $ billions)

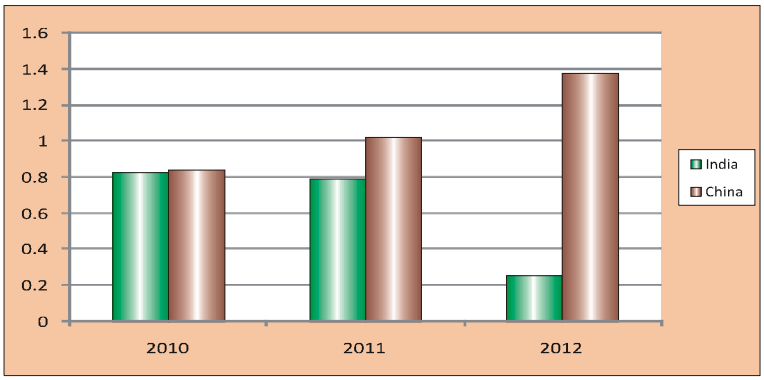
Country	2010	2011	2012
India	13.17	13.88	4.83
China	49.3	60.15	101.21



Direct Investment Flows Abroad

(% age of GDP)

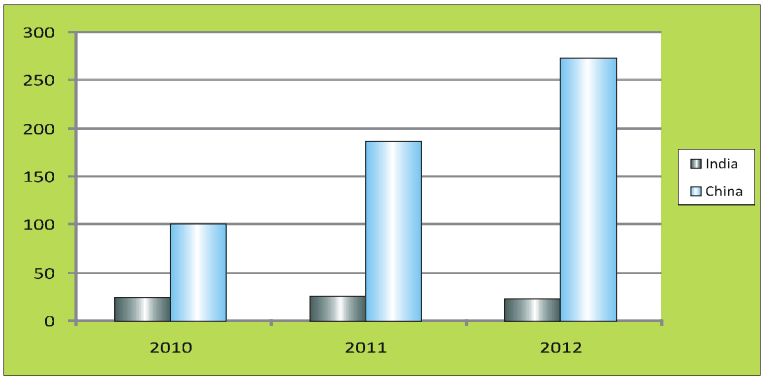
Country	2010	2011	2012
India	0.83	0.79	0.26
China	0.84	1.02	1.38



Direct Investment Flows Inward

(US $ billions)

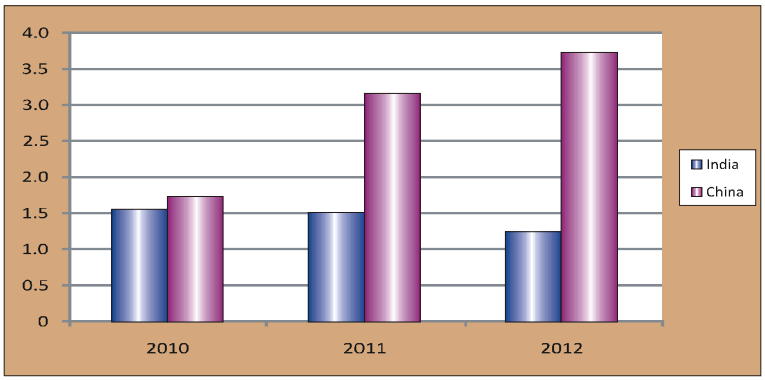
Country	2010	2011	2012
India	24.5	26.19	22.79
China	101.2	185.08	271.66



Direct Investment Flows Inward

(% age of GDP)

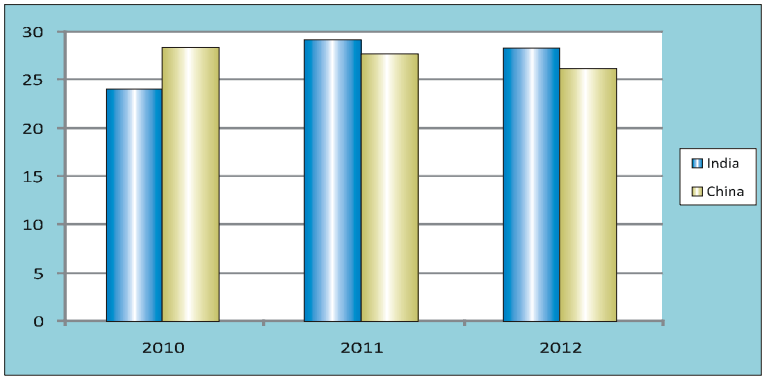
Country	2010	2011	2012
India	1.54	1.49	1.23
China	1.72	3.15	3.71



Trade of GDP Ratio

(Exports + Imports)/ (2*GDP)

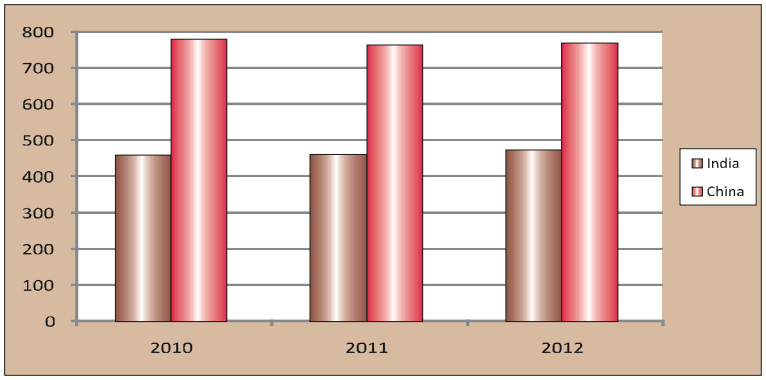
Country	2010	2011	2012
India	24.11	29.20	28.43
China	28.37	27.82	26.36



Employment

(Millions)

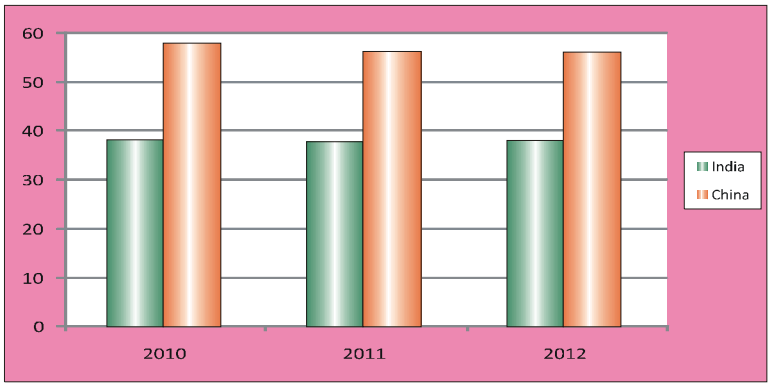
Country	2010	2011	2012
India	456.97	459.51	472.03
China	779.95	764.20	767.04



Employment

(% age of Population)

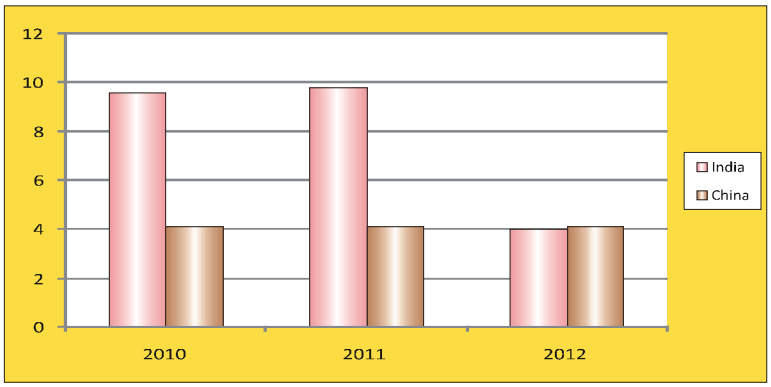
Country	2010	2011	2012
India	38.38	37.97	38.30
China	58.43	56.72	56.65



Unemployment Rate

(% age)

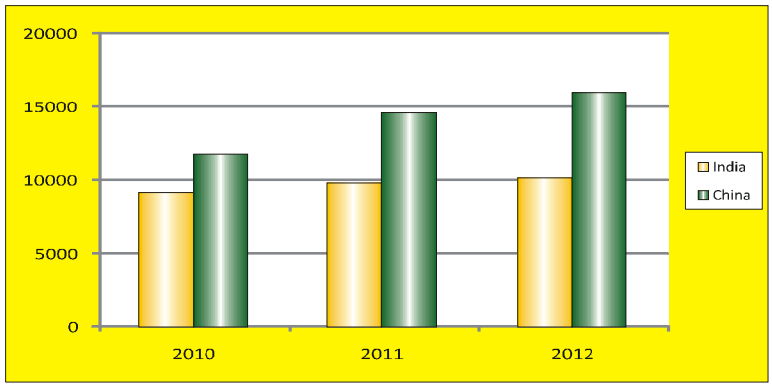
Country	2010	2011	2012
India	9.62	9.80	4.0
China	4.10	4.10	4.1



Overall Productivity (PPP)

(GDP per person employed, US $)

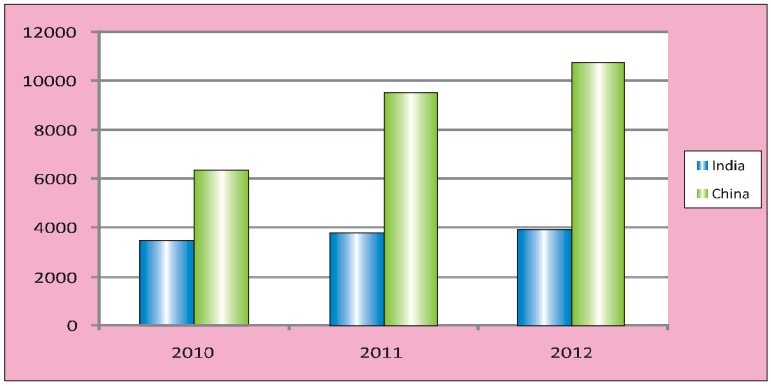
Country	2010	2011	2012
India	9101	9759	10080
China	11656	14532	15868



Overall Productivity

(GDP per person employed, US $)

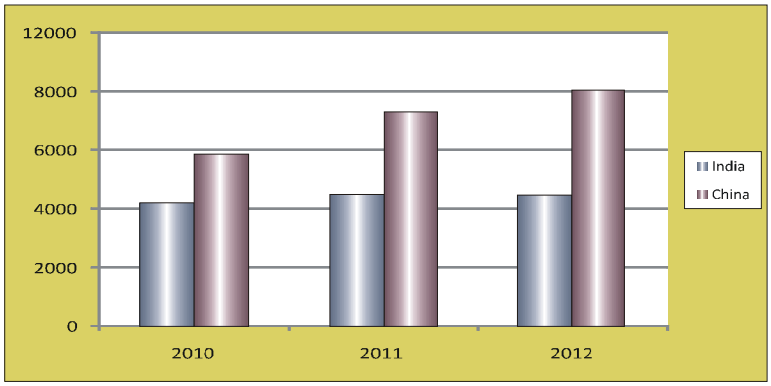
Country	2010	2011	2012
India	3473	3823	3932
China	6391	9550	10726



Labour Productivity (PPP)

(GDP (PPP) per person employed per hour, US $)

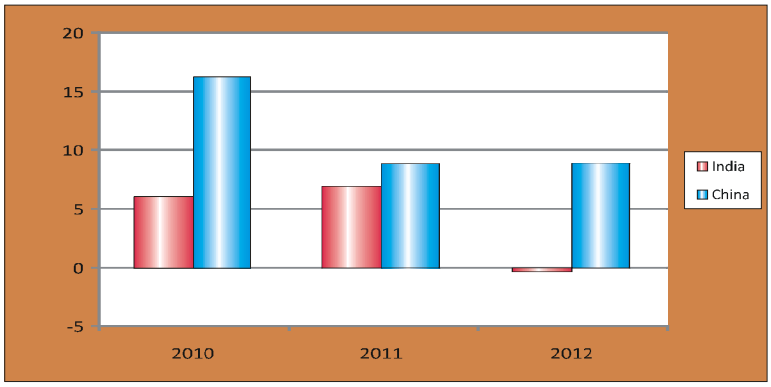
Country	2010	2011	2012
India	4.17	4.47	4.46
China	5.83	7.27	8.04



Labour Productivity Growth (PPP)

(% age change of GDP (PPP) per person employed per hour)

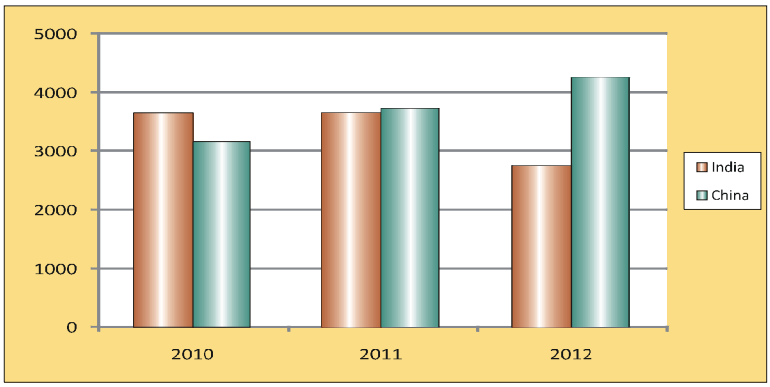
Country	2010	2011	2012
India	5.97	6.85	-0.34
China	16.12	8.75	8.82



Agricultural Productivity (PPP)

(US $)

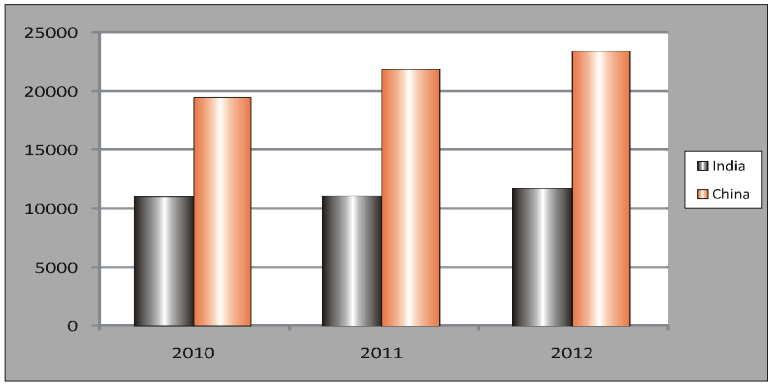
Country	2010	2011	2012
India	3635	3648	2744
China	3166	3714	4263



Productivity in Industry (PPP)

(US $)

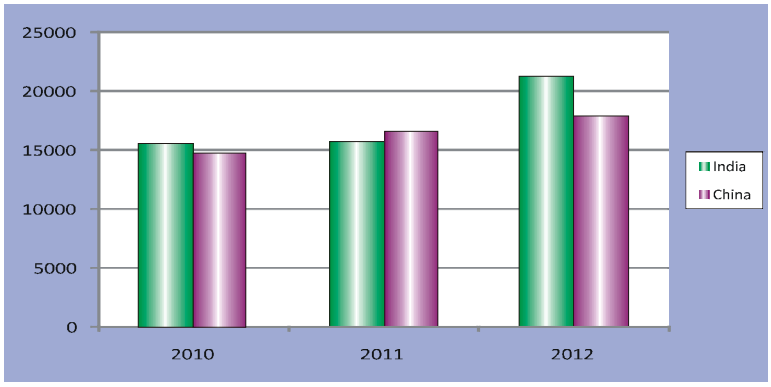
Country	2010	2011	2012
India	10972	11012	11666
China	19410	21790	23344



Productivity in Services (PPP)

(US $)

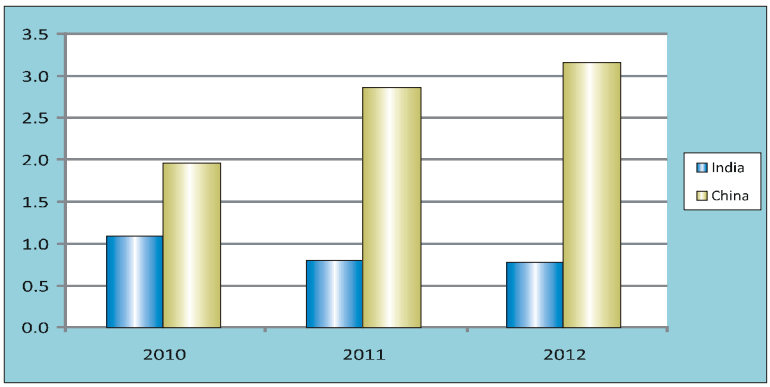
Country	2010	2011	2012
India	15749	15806	21323
China	14817	16607	17942



Compensation levels

(US $)

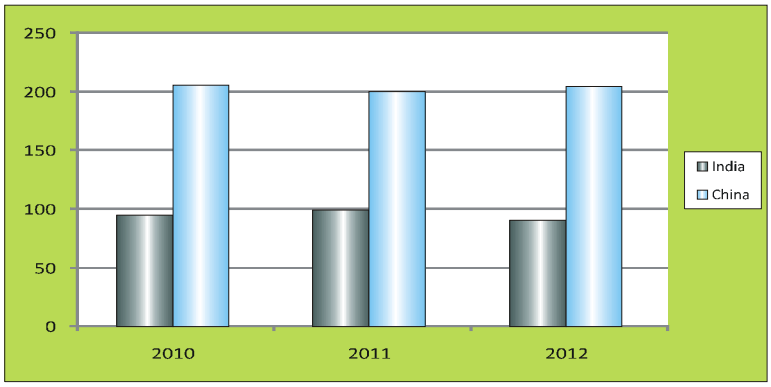
Country	2010	2011	2012
India	1.09	0.80	0.77
China	1.96	2.86	3.15



Banking Sector Assets

(% of GDP)

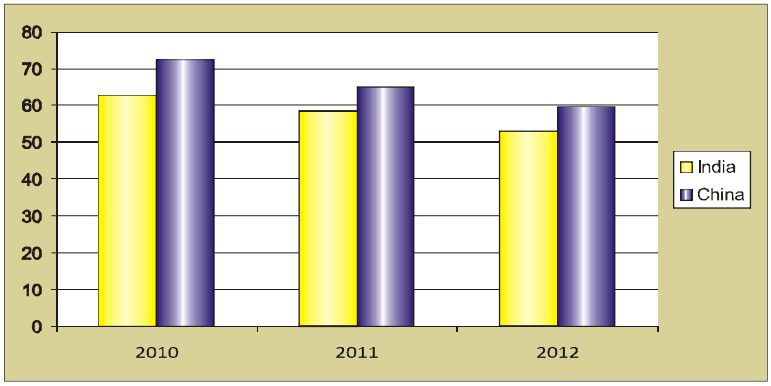
Country	2010	2011	2012
India	94.84	98.68	90.71
China	204.19	199.11	204.84



Investment Risks

(Number)

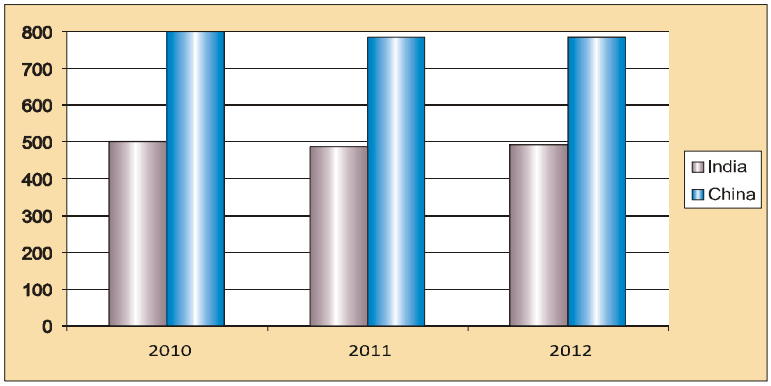
Country	2010	2011	2012
India	62.80	58.20	52.95
China	72.60	65.10	59.64



Labour Force

(Millions)

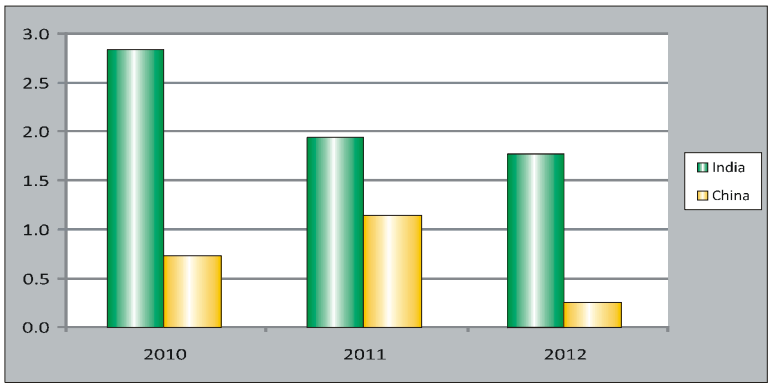
Country	2010	2011	2012
India	496.33	487.60	491.70
China	798.12	783.88	785.79



Labour Force Growth

(% Age)

Country	2010	2011	2012
India	2.84	1.94	1.76
China	0.72	1.13	0.24



NPC TRAINING PROGRAMME CALENDAR

May-, 2014 to Sept., 2014 (Residential Programmes)

Sl. No.	Name of the Programme	Dates	Venue	Fee (Rs.) + S. Tax	Sponsored by
BHUBANESWAR -RPMG					
1.	Effective Procurement And Contracts Management	July 22-24, 2014	Puri/ Bhubaneswar	28,000/-	NPC Self Run
2.	Improving Effectiveness Of Secretarial And Administrative Staff	Aug. 26-28, 2014	Puri/ Bhubaneswar	25,000/-	NPC Self Run
CHANDIGARH-RPMG					
1.	Result Framework Document (RFD) and Balance Scorecard for Performance Measurement.	June 16-20, 2014	Manali	35,900/-	NPC Self Run
2.	Advance Course on Right To Information (RTI) Act and Modern HR Practices	June 23-27, 2014	Manali	35,900/-	NPC Self Run
3.	Managing Finance For Improving Organizational Performance and New Company Act, 2013	July 7-11, 2014	Manali	35,900/-	NPC Self Run
4.	Effective Office Management & Administration (CCS Rules, Leave, Medical, Travel Rules Act etc.) And Time & Stress Management	July 21-25, 2014	Gangtok	38,900/-	NPC Self Run
5.	E-Governance and Knowledge Management	Aug. 18-22, 2014	Ooty	36,900/-	NPC Self Run
6.	Result Framework Document (RFD) And Balance Scorecard For Performance Measurement	Sept. 22-26, 2014	Manali	36,900/-	NPC Self Run
ECONOMIC SERVICES GROUP-HQS					
1.	Project Management & Financial Monitoring	May 26-30, 2014	Gangtok, Sikkim	42,000/-	NPC Self Run
2.	Effective Office Administration & Financial Management	July 19-23, 2014	Leh-Ladakh	42,000/-	NPC Self Run
3.	Productivity & Competitiveness: Concepts and Measurement	Aug. 30, Sep.-3, 2014	Munnar, Kerala	42,000/-	NPC Self Run
ENERGY MANAGEMENT - HQS					
1.	Preparatory Training Course For Energy Auditors And Energy Managers	5 Days (Jul/Aug 2014) BEE examination for CEA/CEM	PMI Noida	Sponsored Programme	PMI Noida

(Residential Programmes)

Sl. No.	Name of the Programme	Dates	Venue	Fee (Rs.) + S. Tax	Sponsored by
ENVIRONMENT GROUP - HQS					
1.	Productivity Enhancement Through Waste Minimization	June 09-13, 2014	Manali	45,000/-	NPC Self Run
HUMAN RESOURCE MANAGEMENT GROUP - HQS					
1.	Organizational Excellence Through Team Work	May 19-23, 2014	Gangtok	42,000/-	NPC Self Run
2.	Interpersonal Skills at Workplace	June 02-06, 2014	Manali	42,000/-	NPC Self Run
3.	HR and IT Tool For Performance Enhancement	June 16-20, 2014	Srinagar	42,000/-	NPC Self Run
4.	Team Performance for Achieving Excellence	July 7-11, 2014	Leh	42,000/-	NPC Self Run
5.	Achieving Organizational Excellence	Aug. 18-22, 2014	Kathmandu	42,000/-	NPC Self Run
6.	Modern Office Management and RTI Act.	Sep. 15-19, 2014	Port Blair	42,000/-	NPC Self Run
HYDERABAD-RPMG					
1.	Leadership For Organizational Excellence	May 26-30, 2014	Hyderabad	50,000/-	NPC Self Run
2.	Developing Executive Secretaries	June 02-06, 2014	Hyderabad	40,000/-	NPC Self Run
3.	Six Sigma	July 21-25, 2014	Hyderabad	50,000/-	NPC Self Run
4.	Implementation & Internal Auditing of ISO 9001-2008 QMS	Aug. 25-29, 2014	Hyderabad	40,000/-	NPC Self Run
5.	Leadership and Team Building	Sept. 08-12, 2014	Hyderabad	40,000/-	NPC Self Run
INFORMATION TECHNOLOGY GROUP - HQS					
1.	Knowledge and Innovation Management	May 26-30, 2014	Leh	42,000/-	NPC Self Run
2.	Knowledge Management Practices and Applications	Aug. 04-08, 2014	Ooty	42,000/-	NPC Self Run
JAIPUR - RPMG					
1.	Finance Management for Functional Executives/Staff	May 17-21, 2014	Mussoorie	42,500/-	NPC Self Run
2.	Developing Executive Secretary, Pa, Ps & Office Staff For Future	May 26-30, 2014	Mussoorie	42,500/-	NPC Self Run
3.	Stress & Time Management	June 04-08, 2014	Mussoorie	42,500/-	NPC Self Run
4.	Professional Development Programme for, PPS, PS, PA, and Office Staff	June24-28, 2014	Mussoorie/ Dalhousie	42,500/-	NPC Self Run

(Residential Programmes)

Sl. No.	Name of the Programme	Dates	Venue	Fee (Rs.) + S. Tax	Sponsored by
JAIPUR - RPMG					
5.	Developing Behaviour Skills for Office Staff/ Officers	July 08-12, 2014	Dalhousie/ Mount Abu	42,500/-	NPC Self Run
6.	Systematic Problem Solving & Decision Making	July 23-27, 2014	Jaipur	42,500/-	NPC Self Run
7.	Developing Competencies of Executive Secretary, PA, PS & Office Staff For Future	Aug. 07-11, 2014	Udiapur	42,500/-	NPC Self Run
8.	Effective Office Administration & Management: Focus RTI	Aug. 23-27, 2014	Jaisalsmer	42,500/-	NPC Self Run
9.	Project/ Programme/ Scheme Performance Management	Sep. 03-07, 2014	Mussoorie	42,500/-	NPC Self Run
10.	Stress & Time Management	Sep. 20-24, 2014	Udaipur	42,500/-	NPC Self Run
KANPUR- RPMG					
1.	Developing Competencies of Executive Secretaries, Personal Assistants & Office Staff for Better Performance	May 26-30, 2014	Mussoorie	42,500/-	NPC Self Run
2.	Modern Office Management With Focus On HR & IT Tools	June 24-28, 2014	Mussoorie	42,500/-	NPC Self Run
3.	Systematic Problem Solving	Sep./Oct., 2014	Goa	40,000/-	NPC Self Run
PATNA - RPMG					
1	HR & IT Skills for Improved Performance	Sept. 22-26, 2014	Gaya	40,000/-	NPC Self Run
PROCESS MANAGEMENT GROUP - HQS					
1.	Developing Competencies of Executive Secretaries; Personal Assistants and Office Staff	June 16-20, 2014	Mussoorie	NA	NPC Self Run
2.	Modern Office Management With Focus on HR Tools	Sept. 22-26, 2014	Munnar	NA	NPC Self Run

NPC TRAINING PROGRAMME CALENDAR

May-, 2014 to Sept., 2014 (Non-Residential Programmes)

Sl. No.	Name of the Programme	Dates	Venue	Fee (Rs.) + S. Tax	Sponsored by
BANGALORE - RPMG					
1.	Lean Management - Tools & Techniques	Aug. 25-26, 2014	Bangalore	4,500/-	NPC Self Run
2.	Energy Audit & Conservation	Sept. 25-26, 2014	Bangalore	4,500/-	NPC Self Run
AIP CHENNAI					
1.	Cycle Time Reduction	June 10-11, 2014	Chennai	6,500/-	NPC Self Run
2.	TQM and Six Sigma	June 26-27, 2014	Chennai	6,500/-	NPC Self Run
3.	Modern Maintenance Management	July, 10-11, 2014	Chennai	6,500/-	NPC Self Run
4.	Team Building	July, 22-23, 2014	Chennai	6,000/-	NPC Self Run
5.	Challenges in Safety Management	Aug. 05-06, 2014	Chennai	NA	NPC Self Run
6.	Poke-Yoke & SMED	Aug. 28-29, 2014	Chennai	7,000/-	NPC Self Run
7.	System And Network Security (IT)	Sept. 09-10, 2014	Chennai	7,000/-	NPC Self Run
8.	Shop Floor Productivity Through Better Human Relations.	Sept. 25-26, 2014	Chennai	6,000/-	NPC Self Run
GANDHINAGAR - RPMG					
1.	Practice Oriented Certificate Programme on Materials Flow Cost Accounting (MFCA) for SMEs	June 23-24, 2014	Ahmedabad	Nil	NPC Self Run
2.	DO	June 27-28, 2014	Chennai	Nil	NPC Self Run
3.	DO	July 03-04, 2014	New Delhi	Nil	NPC Self Run
GUWAHATI - RPMG					
1.	Awareness Training Programme on Productivity Improvement Techniques	May, 29, 2014	Guwahati	5000/-	NPC Self Run
2.	Orientation Programme on ISO 9001, ISO14001 and OHSAS 18001	June 19-20, 2014	Guwahati	10,000/-	NPC Self Run
3.	Awareness Training Programme on Lean Manufacturing	July 18, 2014	Guwahati	5,000/-	NPC Self Run
4.	Awareness Training Programme on Record & Management	Aug. 28-29, 2014	Guwahati	6,000/-	NPC Self Run
5.	Awareness Training Programme on Project Management	Sept. 18-19, 2014	Guwahati	10,000/-	NPC Self Run

(Non-Residential Programmes)

Sl. No.	Name of the Programme	Dates	Venue	Fee (Rs.) + S. Tax	Sponsored by
PATNA - RPMG					
1.	Developing Executive Secretaries, Pa, Ps, Office Staff for Future	May 29-30, 2014	Patna	6,500/-	NPC Self Run
2.	Developing Executive Secretaries, PAs, PSs, Office Staff for Future	June 16-17, 2014	Ranchi	6,500/-	NPC Self Run
ENERGY MANAGEMENT GROUP - HQ					
1.	Energy Efficiency in Electrical Utilities	Sept. 18-19, 2014	New Delhi	12,000/-	NPC Self Run
2.	Preparatory Training Course For Energy Auditors And Energy Managers	5 Days (Jul/Aug. 2014) BEE Examination for CEA /CEM	New Delhi	15,000/-	NPC Self Run
INFORMATION TECHNOLOGY GROUP - HQ					
1.	Information Risk Management and ISMS	June 16-18, 2014	NPC, HQ	15,000/-	NPC Self Run
2.	Certificate Course On e-Governance	July 14-16, 2014	NPC, HQ	15,000/-	NPC Self Run
3.	IT Application for Office Management in Government Sector	Sept. 01-03, 2014	NPC, HQ	15,000/-	NPC Self Run
TECHNOLOGY MANAGEMENT GROUP - HQ					
1.	International Minimum Industry Safety Training (IMIST) For Oil & Gas Industry	May 20-22, 2014	NPC Conference Hall	15,000/-	NPC Self Run
2.	Industrial Safety Management & Risk Assessment	June 10-12, 2014	NPC Conference Hall	15,000/-	NPC Self Run
3.	Spare Parts Management & Inventory Control	July 22-24, 2014	NPC Conference Hall	15,000/-	NPC Self Run
4.	Implementation of 5-S & Good Housekeeping Practices	Aug. 13, 2014	NPC Conference Hall	4,000/-	NPC Self Run
5.	Developing Internal Auditors for IMS based on ISO 9001;2008,ISO 14001;2004, OHSAS 18001;2007 & ISO 50001;2010	Sept. 10-12, 2014	NPC Conference Hall	15,000/-	NPC Self Run
6.	Implementation of Total Productive Maintenance (TPM) in Industry	Sept. 24-25, 2014	NPC Conference Hall	10,000/-	NPC Self Run
ECONOMIC SERVICES GROUP - HQ					
1.	Project Management & Financial Monitoring	May 26-30, 2014	Gangtok, Sikkim	30,000	NPC Self Run
2.	Effective Office Administration & Financial Management	July 19-23, 2014	Leh-Ladakh	30,000	NPC Self Run
3.	Productivity & Competitiveness; Concepts and Measurement	Aug. 30-Sept. 03, 2014	Munnar, Kerala	30,000	NPC Self Run

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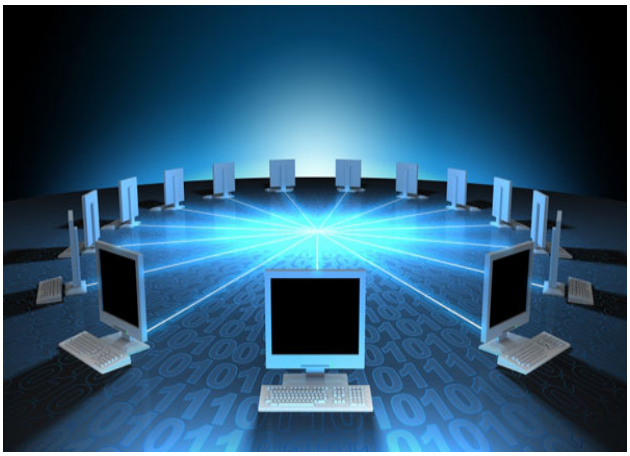
इंटरनेट को कौन संचालित करता है?

सुनील अब्राहम

पिछले वर्ष की दूसरी छमाही इंटरनेट संचालन की दृष्टि से ऐतिहासिक रही, जिसका मुख्य कारण था एडवर्ड ? स्नोडेन नाम का एक व्यक्ति। जर्मन चांसलर एंजेला मार्केल और ब्राजील के राष्ट्रपति डिल्मा रोसफे को पता चला कि वे अमरीकी निगरानी का लक्ष्य हैं, सुरक्षा संबंधी कारणों से नहीं बल्कि आर्थिक कारणों से। उन्होंने इसका जोरदार विरोध किया। इतिहास, प्रौद्योगिकी, सांस्थिति और वाणिज्य संबंधी कारणों से कथित परोपकारी तानाशाह या इंटरनेट के प्राथमिक संरक्षक के रूप में अमरीका की भूमिका एक बार फिर से जांच के घेरे में आ गई। आई स्टार निकायों ने 7 अक्तूबर को मोंटेवीडियो स्टेटमेंट जारी करते हुए अपनी प्रतिक्रिया व्यक्त की। इन निकायो को तकनीकी समुदाय के रूप में भी जाना जाता है जिनमें इंटरनेट कार्पोरेशन फॉर असाइंड नेम्स एंड नंबर्स (आईसीएएनएन); 5 क्षेत्रीय इंटरनेट रजिस्ट्रीज (आरआईआर्स) यानी अफ्रीकी, अमरीकी, एशिया–प्रशांत, यूरोपीय और लैटिन अमरीकी; दो मानक निर्धारण संगठन – वर्ल्ड वाइड वेब कंसोर्टियम (डब्ल्यू3सी) और इंटरनेट इंजीनियरिंग टॉस्क फोर्स (आईईटीएफ); इंटरनेट आर्किटेक्चर बोर्ड (आईएबी); और इंटरनेट सोसायटी (आईएसओसी) शामिल हैं। वक्तव्य में 'व्यापक नियंत्रण और निगरानी से मिली अद्यतन जानकारियों के अनुसार वैश्विक इंटरनेट इस्तेमालकर्ताओं के भरोसे और विश्वास की अनदेखी किए जाने पर गंभीर चिंता' प्रकट की गई। इसमें 'आईसीएएनएन और आईएएनए कार्यो के वैश्वीकरण की प्रक्रिया में तेज़ी लाने' की आवश्यकता पर बल दिया गया। इसे देखते हुए यह प्रश्न उठता है कि क्या आई स्टार निकाय अंतिम रूप से यह चाहते हैं कि इंटरनेट के संचालन में अमरीका द्वारा अदा की जा रही विशेष भूमिका को समाप्त किया जाए? किंतु, दृष्टिकोण में इस नाटकीय परिवर्तन की पुष्टि के रूप में यह भी गया कि 'यह वैश्वीकरण एक ऐसे माहौल में हो जिसमें सभी सरकारों सहित सभी संबद्ध पक्षों की समान भागीदारी हो।' इससे स्पष्ट है कि आई स्टार निकाय बहु–पक्षवाद के ख़िलाफ़ कोई समझौता करने के पक्ष में नहीं हैं। दो दिन बाद राष्ट्रपति रोसफे ने फैडी चेहाडे के साथ एक बैठक के बाद ट्वीटर पर घोषणा की कि ब्राज़ील 'सरकारों, उद्योग जगत, सिविल सोसायटी और शिक्षाविदों के एक अंतर्राष्ट्रीय सम्मेलन' की मेजबानी करेगा। इस प्रस्तावित सम्मेलन को अब नेट मुडियल का नाम दिया गया है और 23 तथा 24 अप्रैल को साओ पाउलो में होने वाले सम्मेलन में



विचार–विमर्श के लिए 'सैद्धांतिक' अथवा 'इंटरनेट संचालन पारिस्थितिकी प्रणाली के अधिक विकास की रूपरेखा तैयार करने' के बारे में 188 प्रस्ताव प्रस्तुत किए गए हैं। यह बैठक निश्चित रूप से पारिस्थितिकी तंत्र में बहुपक्षीय और बहु–साझेदार व्यवस्था के लिए एक महत्वपूर्ण मील का पत्थर सिद्ध होगी।

बहु–पक्षवाद और बहु–साझेदारीवाद के बीच शुरू हुई यह बहस एक दशक से अधिक पुरानी हो चुकी है। बहु–साझेदारीवाद शासन का एक ऐसा रूप है, जो यह सुनिश्चित करने का प्रयास करता है कि नीति निर्धारण व्यवस्था में प्रत्येक साझेदार को एक सीट प्राप्त हो (चाहे परामर्शदाता क्षमता में अथवा निर्णय करने की क्षमता में, जो इस बात पर निर्भर हो कि आप किस की मांग करते हैं)। ट्यूनिस कार्यसूची (एजेंडा), जो 2003–05 के दौरान सूचना समाज संबंधी विश्व सम्मेलन (डब्ल्यूएसआईएस) के विचार विमर्श का अंतिम परिणाम था, में बहु–साझेदारी पद्धति को उचित ठहराया गया था। यथास्थिति बनाए रखने के पक्षधरों ने सूचना समाज के बारे में विश्व सम्मेलन को संयुक्त राष्ट्र निकायों या बहु–पक्षवाद द्वारा इंटरनेट का नियंत्रण अपने हाथ में लेने के प्रथम प्रयास के रूप में देखा। किंतु, ट्यूनिस कार्यसूची ने स्पष्ट किया और इस बात की पुष्टि भी की कि बहु–साझेदारीवाद आगे के लिए सही मार्ग है, हालांकि बहु–पक्षवाद को भी इंटरनेट संचालन के एक वैध घटक के रूप में स्वीकार किया गया। साझेदारों की सूची में राष्ट्र, निजी क्षेत्र, सिविल सोसायटी, अंतर–सरकारी संगठन, अंतर्राष्ट्रीय मानक संगठन और ऊपर वर्णित 'साझेदार समूहों के भीतर शैक्षिक और तकनीकी समुदाय' शामिल थे।

ट्यूनिस कार्यसूची ने इंटरनेट गवर्नेंस फोरम (आईजीएफ) का भी गठन किया और संवर्धित सहयोग की प्रक्रिया शुरू की। आईजीएफ को व्यापक रूप में परिभाषित किया गया और उसके लिए 12 सूत्री लक्ष्य निर्धारित किए गए जिनमें उभरते हुए 'मुद्दों की पहचान करना, संबद्ध निकायों और आम लोगों का ध्यान उनकी तरफ आकर्षित करना और जहां कहीं उचित हो, सिफ़ारिशें करना' शामिल था। संक्षेप में, यह एक शिक्षण मंच, बातचीत का एक माध्यम और उदार नियम विकसित करने का एक स्थान था, जो किन्हीं अंतर्राष्ट्रीय संधियों का माध्यम नहीं था। संवर्धित सहयोग को परिभाषित करते हुए कहा गया कि ''इसका उद्देश्य सरकारों को इंटरनेट से संबंधित अंतर्राष्ट्रीय सार्वजनिक नीति के मुद्दों में अपनी भूमिकाएं और दायित्वों का निर्वाह करने में समान स्तर पर सक्षम बनाना था, लेकिन तकनीकी और प्रचालन संबंधी मामलों में उन्हें कोई भूमिका प्रदान करना नहीं था क्योंकि उनका अंतराष्ट्रीय सार्वजनिक नीति संबंधी मुद्दों पर कोई प्रभाव नहीं पड़ता है।'' उसके बाद से अभी तक इसे अधिक स्पष्ट रूप में परिभाषित करने के प्रयास जारी हैं।

> ^^fo'oHkj e Vyhfotu puyk d n'kdk l
> lcf/kr vkdMk l irk pyrk g fd fdlh Hkh
> vklr fnu e fo'oHkj e cgl[;d puyk u
> jktuhfrd vfHk0;fDr dh otk; lkLÑfrd
> vfHk0;fDr dk ojh;rk inku dhA phu dh nhokj
> doy mld ukxfjdk&bVjuVtuk dk iHkkfor
> djrh g vkj mldh lljf'ki dk iHkko vU;
> vf/kdkj {k=k ij ugh iMrk gA nljh rjQ]
> vejhdh lljf'ki dk iHkko yxHkx lep
> fo'o ij iMrk gA bldh otg ;g g
> fd mldh lljf'ki 0;oLFkk e[; :i
> l Cykfdx ;k fQYVfjx ij vk/kkfjr ugh g
> cfYd igpku] ik|kfxdh vkj foRrh;
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सात वर्ष बाद, दुबई में विश्व दूरसंचार सम्मेलन के दौरान यथास्थिति बनाए रखने के पक्षधरों ने इंटरनेट का नियंत्रण संयुक्त राष्ट्र द्वारा अपने हाथ में लिए जाने का एक और प्रयास किया। यहां तक कि गैर–अमरीकी सिविल सोसायटी के कार्यकर्ता, जो अमरीकी प्रभुत्व के प्रति सहज नहीं थे, वे भी यथास्थिति बनाए रखने के बारे में समझौता करने के इच्छुक थे क्योंकि वे इस बात से कायल थे कि अमरीकी अदालतें किसी भी अन्य देश की तुलना में ऑनलाइन मानवाधिकारों की दृढ़तापूर्वक रक्षा करने में अधिक सक्षम थीं। वास्तव में, अमरीकी

प्रशासन ने संयुक्त राष्ट्र और अंतर्राष्ट्रीय व्यवस्था को वरीयता देने वाले अन्य देशों के निरूपण के लिए एक अच्छा आधार तैयार किया था। हिलेरी क्लिंटन के नेतृत्व में 'इंटरनेट आज़ादी' अमरीकी विदेश विभाग का सिद्धांत था। तत्संबंधी व्याख्या के अनुसार इंटरनेट के मुद्दे पर विश्व समुदाय तीन भागों में विभाजित था–पक्षधर राष्ट्र, विरोधी राष्ट्र और परिवर्तनशील राष्ट्र। अमरीका, ब्रिटेन और कुछ स्केंडिनेवियन देश स्वतंत्रता के पक्षधर थे। चीन, रूस और सउदी अरब अधिकारवादी राष्ट्रों के उदाहरण थे जो इंटरनेट पर सेंसरशिप के पक्षधर थे। इसके अतिरिक्त भारत, ब्राज़ील और इंडोनेशिया परिवर्तनशील राष्ट्रों के उदाहरण थे जो उपरोक्त दोनों समूहों में कहीं भी जा सकते थे।

किंतु, इंटरनेट की आजादी का सिद्धांत एक गंभीर छलावा था। अमरीकी सेंसरशिप व्यवस्था चीन से बेहतर नहीं थी। चीन राजनीतिक अभिव्यक्ति को सेंसर किए जाने के पक्ष में था जबकि अमरीका बौद्धिक संपदा अधिकार–धारकों के नाम पर ज्ञान को सेंसर किए जाने का पक्षधर था, उनका हिलेरी पर जबर्दस्त प्रभाव था। विश्वभर में टेलीविजन चैनलों के दर्शकों से संबंधित आंकड़ों से पता चलता है कि किसी भी औसत दिन में विश्वभर में बहुसंख्यक चैनलों ने राजनीतिक अभिव्यक्ति की बजाय सांस्कृतिक अभिव्यक्ति को वरीयता प्रदान की। चीन की दीवार केवल उसके नागरिकों–इंटरनेटजनों को प्रभावित करती है और उसकी सेंसरशिप का प्रभाव अन्य अधिकार क्षेत्रों पर नहीं पड़ता है। दूसरी तरफ, अमरीकी सेंसरशिप का प्रभाव लगभग समूचे विश्व पर पड़ता है। इसकी वजह यह है कि उसकी सेंसरशिप व्यवस्था मुख्य रूप से ब्लौकिंग या फिल्टरिंग पर आधारित नहीं है बल्कि पहचान, प्रौद्योगिकी और वित्तीय मध्यस्थों पर दबाव डालती है, जिससे उन्हें अपने लक्ष्य मजबूरन ऑफलाइन पूरे करने पड़ते हैं। जब हम निगरानी का मूल्यांकन करते हैं तो चीन की तुलना में अमरीकी दृष्टिकोण अधिक खराब लगता है। इसके अतिरिक्त जहां तक सेंसरशिप का

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प्रश्न है, चीन केवल अपने नागरिकों पर व्यापक निगरानी रखता है, जबकि इससे भिन्न अमरीकी निगरानी न केवल उसके नागरिकों को प्रभावित करती है बल्कि बहु–परतीय दृष्टिकोण के माध्यम से प्रत्येक एकल इंटनेट इस्तेमालकर्ता को भी प्रभावित करती है। इन परतों में कार्यक्रमों और नीतियों के अनेक समूह शामिल हैं, जैसे मालवेयर, ट्रोजन, सॉफ्टवेयर संवेदनाएं और एन्क्रिप्शन मानकों में पिछले मार्ग से प्रवेश, जो प्रमुख सेवा प्रदाताओं, टेल्कोज़, आईएसपी, राष्ट्रीय बुनियादी ढांचे और सबमरीन फाइबर ऑप्टिक केबल्स पर रोक लगाते हैं। सुरक्षा विशेषज्ञ ब्रूस स्केनियर के अनुसार 'प्राइवेसी (निजता) के बिना सुरक्षा का कोई अर्थ नहीं है और स्वतंत्रता के लिए सुरक्षा और निजता दोनों जरूरी हैं।' इस प्रकार केवल निगरानी सुरक्षा संबंधी आवश्यकता की अनदेखी करती है और कार्यात्मक बाज़ारों से समझौता करती है। इनमें ई–कॉमर्स, ई–बैंकिंग, बौद्धिक संपदा, व्यक्तिगत जानकारी और गोपनीय जानकारी के लीक होने का जोखिम बढ़ जाता है। इंटरनेट और सूचना समाज को सुरक्षित बनाने के लिए सरकारी और निजी क्षेत्र द्वारा व्यापक निगरानी आवश्यक होगी।

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अवरोधयुक्त आईपी व्यवस्था के साथ अमरीका से भिन्न, भारत का विश्वास है कि भाषण और अभिव्यक्ति की स्वतंत्रता के लिए ज्ञान तक पहुँच एक पूर्व शर्त है। जहां तक वैश्विक बौद्धिक संपदा नीति अथवा ज्ञान नीति तक पहुँच का प्रश्न है, भारत को घरेलू नीति और अंतर्राष्ट्रीय नीति विकास के मामले में विश्व बौद्धिक संपदा संगठन के स्तर पर अग्रणी समझा जाता है। पिछली सदी में 70 के दशक से हमारे नीति–निर्माता दवाओं तक पहुंच के रूप में स्वास्थ्य के अधिकार के हिमायती रहे हैं। हाल ही में जून 2013 में भारत ने दृष्टिबाधित व्यक्तियों के लिए मराकश संधि करवाने में महत्वपूर्ण भूमिका अदा की। यह संधि दृष्टिबाधित व्यक्तियों को एक इस्तेमालकर्ता अधिकार (जिसे एक विशिष्टता, लचीलापन या परिसीमन के रूप में देखा जाता है) प्रदान करती है, जिससे दृष्टिबाधित व्यक्ति कॉपीराइटधारक को कोई भुगतान किए बिना पहुंच योग्य प्रारूप में उपलब्ध पुस्तकों को ब्रेल में परिवर्तित कर सकते हैं। मराकश संधि केवल विकलांगता विषयक (केवल दृष्टिबाधित व्यक्तियों के लिए) है और यह विशेष रूप से काम (केवल कॉपीराइट के मामले में) करती है। यह नीतिगत दृष्टि से उपयुक्त पद्धतियों की निर्यात नीति के मामले में भारत की सफलता का पहला उदाहरण है। कॉपीराइट अधिनियम में विकलांगों के लिए भारत की छूट मराकश संधि से भिन्न है, लेकिन यह विकलांगता निरपेक्ष और कार्य निरपेक्ष, दोनों से संबद्ध है। इसे देखते हुए कि संधि के सफल कार्यान्वयन, अर्थात् किसी एक देश में विकलांग व्यक्तियों के लिए उपलब्ध पुस्तकों को विश्व समुदाय हेतु भागीदारी के लिए इंटरनेट महत्वपूर्ण है, भारत के लिए यह उचित समय है कि वह इंटरनेट संचालन और सूचना समुदायों के व्यापक प्रबंधन के क्षेत्र में अपना प्रभाव बढ़ाए।

स्नोडेन परवर्ती स्थिति में, कथित परिवर्तनशील राष्ट्रों के पास अधिक ऊंचा नैतिक आधार है। इन देशों के लिए यह उचित समय है कि वे सुदृढ़ राजनीतिक इच्छाशक्ति का इस्तेमाल करते हुए इस मुद्दे पर एकजुट हों। दवाओं तक पहुंच के परिप्रेक्ष्य में मैत्रीपूर्ण अधिकार क्षेत्र के लिए प्रयास करने की बजाय भारत के लिए यह उचित समय है कि वह ज्ञान तक व्यापक पहुंच का अधिकार क्षेत्र कायम करने के लिए काम करे। हम विकासशील देशों को सस्ते और नवीन डिजिटल हार्डवेयर (विशेष रूप से मोबाइल फोन) प्रदान करने के लिए पेटेंट समूहों और अनिवार्य लाइसेंसिंग का इस्तेमाल कर सकते हैं। इससे यह सुनिश्चित हो सकेगा कि अधिकारधारक, आविष्कारक, विनिर्माता, उपभोक्ता और सरकारों सभी को भारत के एक वैश्विक फार्मेसी बनने से परे इलेक्ट्रॉनिक्स स्टोर बनने पर, अधिक लाभ होगा। हम ब्राडबैंड कॉपीराइट उपकर अथवा लेवी जैसे लैट शुल्क लाइसेंसिंग मॉडलों की खोज कर सकते हैं ताकि भारत में सभी इस्तेमालकर्ताओं को कंटेंट अर्थात् विषयवस्तु (सामग्री, चित्र, वीडियो, ऑडियो, गेम और सॉफ्टवेयर) सस्ती दरों पर सुनिश्चित की जा सके और साथ ही अधिकारधारकों के लिए सभी इंटरनेट इस्तेमालकर्ताओं से कुछ रायल्टी की व्यवस्था की जा सके। इससे उन्हें अमरीका द्वारा स्थापित कॉपीराइट प्रवर्तन अधारित सेंसरशिप व्यवस्था

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को कमज़ोर करने में मदद मिलेगी। जहां तक प्राइवेसी या निजता का प्रश्न है, हम विश्व स्तरीय निजता कानून बना सकते हैं और एक स्वतंत्र एवं स्वायत्र तथा सक्रिय निजता आयुक्त की स्थापना कर सकते हैं जो और सरकारी सेवा

प्रदाताओं को संक्षिप्त लीज पर रख सकता है। इसके बाद हमें एक वैज्ञानिक, लक्षित निगरानी व्यवस्था की आवश्यकता होगी जो मानवाधिकार सिद्धांतों के अनुपालन के अनुसार हो। इससे भारत आईपी और निजता की दृष्टि से एक साथ सुरक्षित स्थान होगा और वह निजी क्षेत्र से भारी पूंजी निवेश आकर्षित कर सकेगा तथा वैश्विक सिविल सोसायटी और स्वतंत्र मीडिया का सदभाव अर्जित कर सकेगा। इसे देखते हुए कि सुरक्षा के लिए निजता एक पूर्व शर्त है, इससे भारत साइबर सुरक्षा की दृष्टि से भी अत्यंत सुरक्षित बन सकेगा। निश्चय ही हमारी वर्तमान परिस्थितियों में यह एक आदर्श स्वप्न है लेकिन एक राष्ट्र के रूप में अपनाने के लिए यह हमारे लिए निश्चिय ही एक संभव भविष्य है।

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बहु–साझेदारीवाद और बहु–पक्षवाद के बीच तनाव का एक हिस्सा यह भी है कि इंटरनेट प्रशासन की कोई एकल, सार्वभौम रूप में स्वीकृत परिभाषा नहीं है। इंटरनेट संचालन की रूढ़िवादी परिभाषाएं महत्वपूर्ण इंटरनेट संसाधनों के प्रबंधन तक सीमित रखती हैं, जिसके अंतर्गत डोमेन नाम प्रणाली, आईपी ड्रेसेज़ और रूट सर्वर्स–दूसरे शब्दों में, आईसीएएनएन, आईएएनए कार्य, क्षेत्रीय रजिस्ट्रीज़ और अन्य आई' निकाय शामिल हैं। यह ऐसी स्थिति है जहां अमरीकी प्रभुत्व ऐतिहासिक दृष्टि से सर्वाधिक स्पष्ट है। यह ऐसी स्थिति भी है जहां बहु–साझेदार मॉडल अभी तक स्पष्ट रूप से काम करता रहा है। अतः हमें मौजूदा संचालन प्रबंधों के टूटने के प्रति भी सर्वाधिक ध्यान अवश्य देना होगा। इस संदर्भ में अमरीकी प्रभुत्व को कम करने के लिए मोटेतौर पर 4 दृष्टिकोण हैं – (क) वैश्विकरण अर्थात् मौजूदा बहु–साझेदारी व्यवस्था के भीतर अन्य देशों को अमरीका के समान भूमिका देना (ख) अंतर्राष्ट्रीयकरण (आईसीएएनएन, आईएएनए कार्यो, रजिस्ट्रीज़ और आई' निकायों को संयुक्त राष्ट्र नियंत्रण या निगरानी के अंतर्गत लाना (ग) आईएएनए कार्यो में राष्ट्रों की भूमिका समाप्त करना और (घ) नामों और संख्याओं के प्रबंधन के लिए प्रतिस्पर्धियों की शुरूआत करना।

> ^^D;k ge io&ekudk&cuke ukek vkj l[;kvkd fy, lpkyu d fofHkUu {k=k grq cg&i{kokn d vyx&vyx :ik dh vko';drk gA vkn'k nf"V l bu lokyk dk tokc gh ugh] ugh] ugh vkj gkA ejs fopkj e mi;Dr of'od lpkyu i.kkyh fodUnhÑr] fofo/k vkj cg&i{kh; gkxh yfdu lkFk gh vr%lpkyuh; gkxh] ft le cg&i{kh; vkj cg&lk>nkjh i.k] nkuk gh rjg d lLFkku vkj mi 0;oLFkk,a 'kkfey gkxh vkj ;g Hkh fd ;g 0;oLFkk tufgr d fy, vfu;f=r vkj tufgr d fy, gh fu;f=r Hkh gkxhA**

भले ही यह अंतिम समाधान न हो लेकिन यह सही है कि डोमेन नेम पर जिनका नियंत्रण है और जो आईपी अड्रेस आबंटित करते हैं वे भाषण और अभिव्यक्ति की स्वतंत्रता को

प्रभावित करेंगे। इसे देखते हुए कि राष्ट्रीय सीमाओं के बीच तीन रूट सर्वर हैं, भारत की राष्ट्रीय सुरक्षा पर असर पड़ने की आशंका अत्यन्त क्षीण है और अमरीका के लिए यह लगभग असंभव है कि वह भारत में इंटरनेट सुविधा बंद कर दे।

अधिक व्यापक परिभाषा के लिए इंटरनेट संचालन रिपोर्ट से संबद्ध कार्यदल ने सार्वजनिक नीति मुद्दों से संबंधित अपनी रिपोर्ट में निम्नांकित 4 श्रेणियों को उद्धृत किया है, जो इंटरनेट के प्रबंधन से संबंधित हैं :

''(क) मूलभूत ढांचे से संबंधित मुद्दे और डोमेन नेम प्रणाली एवं इंटरनेट प्रोटोकॉल एड्रेसेज (आईपी एड्रेसेज) के संचालन सहित महत्वपूर्ण इंटरनेट संसाधनों का प्रबंधन, रूट सर्वर प्रणाली का संचालन, तकनीकी मानक, समूहीकरण (पीइरिंग) और अंतर–संचार, नवीन और समरूप प्रौद्योगिकियों सहित दूरसंचार ढांचा और विविध भाषीकरण। ये सभी ऐसे मुद्दे हैं जिनका संबंध इंटरनेट के संचालन के साथ है और जो इन मामलों के लिए जिम्मेदार मौजूदा संगठनों के दायरे के अंतर्गत हैं :

(ख) इंटरनेट के इस्तेमाल से संबंधित मुद्दे, जिनमें शामिल है स्पैम, नेटवर्क सुरक्षा और साइबर अपराध। ये मुद्दे इंटरनेट के संचालन से सीधे संबंधित हैं, लेकिन इनके लिए अपेक्षित वैश्विक सहयोग का स्वरूप परिभाषित नहीं है;

(ग) ऐसे मुद्दे जो इंटरनेट से संबद्ध हैं लेकिन इंटरनेट से अधिक प्रभाव डालने वाले हैं, और जिनके लिए मौजूदा संगठन जिम्मेदार हैं, बौद्धिक संपदा अधिकार और अंतर्राष्ट्रीय व्यापार;

(घ) इंटरनेट संचालन के विकासात्मक पहलुओं से संबंधित मुद्दे, विशेषकर विकासशील देशों में क्षमता निर्माण संबंधित मुद्दे।''

इनमें से कुछ श्रेणियों का समाधान राष्ट्रीय कानून के जरिये किया जाता है जो संयुक्त–राष्ट्र से संबद्ध बहुराष्ट्रीय संस्थानों से पैदा होती हैं जैसे 'बौद्धिक संपदा अधिकारों' से सबंद्ध अंतर्राष्ट्रीय बौद्धिक संपदा संगठन और दूरसंचार ढांचे से संबद्ध अंतर्राष्ट्रीय दूरसंचार संघ। अन्य नीतिगत मुद्दे जैसे 'साइबर अपराधों' का समाधान वर्तमान में बहु–पक्षीय समझौतों द्वारा किया जाता है। उदाहरण के लिए साइबर अपराधों के बारे में बुडापेस्ट सम्मेलन और द्विपक्षीय समझौते जैसे परस्पर कानूनी सहायता संधियां। 'स्पैम' का संचालन फिलहाल निजी क्षेत्र द्वारा आत्म–नियामक प्रयासों के जरिये किया जा रहा है, जैसे–मैसेजिंग, मालवेयर, और मोबाइल एंटी–अब्यूज वर्किंग ग्रुप। अन्य क्षेत्रों, जिनमें पर्याप्त अंतर्राष्ट्रीय या वैश्विक सहयोग नहीं है, के अंतर्गत 'समूहीकरण (पीइरिंग) और अंतर–संचार' शामिल हैं। इन क्षेत्रों में निजी व्यवस्थाएं गोपनीय हैं और यह स्पष्ट नहीं है कि जन–हितों की रक्षा भलीभांति की गई है या नहीं।

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निष्कर्ष रूप में हम कह सकते हैं कि इंटरनेट को कौन संचालित करे यह मुद्दा इतना महत्वपूर्ण नहीं है। ऐसा इसलिए है कि वास्तव में इंटरनेट को कोई भी स्वतः संचालित नहीं करता है। इंटरनेट मानकों, प्रौद्योगिकियों और कार्यकर्ताओं का एक व्यापक संग्रह है जो दिलचस्प तरीके से विभिन्न परतों, भौगोलिक स्थानों और सेवाओं की दृष्टि से अत्यन्त विविध है। इंटरनेट के विभिन्न कर्ताओं में सरकारें, निजी क्षेत्र, सिविल सोसायटी और तकनीकी एवं शैक्षिक समुदाय शामिल हैं, जो पहले से ही विभिन्न मंचों और शासन व्यवस्थाओं द्वारा विनियमित हैं जैसे स्वनियमन, सह–नियमन और सरकारी नियमन। क्या अधिक नियमन हमेशा सही उत्तर हो सकता है? क्या हमें बहु–पक्षवाद और बहु–साझेदारीवाद में से एक को चुनना है? क्या हमें प्रक्रिया संबधी अधिक स्थिर परिभाषाओं की आवश्यकता है? क्या हमें पूर्व–मानकों–बनाम नामों और संख्याओं के लिए संचालन के विभिन्न क्षेत्रों हेतु बहु–पक्षवाद के अलग–अलग रूपों की आवश्यकता है। आदर्श दृष्टि से इन सवालों का जवाब है नहीं, नहीं, नहीं और हां। मेरे विचार में उपयुक्त वैश्विक संचालन प्रणाली विकेन्द्रीकृत, विविध और बहु–पक्षीय होगी लेकिन साथ ही अंतःप्रचालनीय होगी, जिसमें बहु–पक्षीय और बहु–साझेदारीपूर्ण, दोनों ही तरह के संस्थान और यह भी कि यह व्यवस्था जनहित के लिए अनियंत्रित और जनहित के लिए ही नियंत्रित भी होगी।

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खारी मिट्टी को उपजाऊ बनाने की संभावनाएं

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हमारे देश की जनसंख्या जिस रफ्तार से बढ़ रही है उसी तेजी से भूमि का उपयोग भी बढ़ रहा है लेकिन उच्च गुणवत्ता वाले पानी आपूर्ति के स्रेत बड़े ही सीमित होते जा रहे हैं और घुलनशील लवणों के साथ तेजी से प्रदूषित होते जा रहे हैं। अंधाधुंध भूजल दोहन हमारे देश में लवणता प्रवेश की दयनीय और चिंताजनक समस्या के लिए मुख्य रूप से जिम्मेदार है। इसके अलावा बाढ़ के कारण पानी इकट्ठा होना और भूजल या नहर के पानी के माध्यम से अत्यधिक सिंचाई, फ्लैट स्थलाकृति और कमजोर जल निकास भी लवणता की समस्या को बढ़ावा देता है।

भारतीय उपमहाद्वीप की 7500 किलोमीटर लंबाई वाली तट रेखा है और देश की 25 प्रतिशत आबादी तटीय क्षेत्र में ही रहती है। देश के अन्य भागों की तुलना में ज्यादातर शहरी केंद्र भी तटों के साथ ही स्थित हैं और चार महानगरों में से तीन तट पर ही स्थित हैं। देश में औद्योगिकीकरण भी तटीय क्षेत्र में ही सबसे अधिक है। समुद्रतटीय क्षेत्रों में विभिन्न प्रौद्योगिकीय कारक कृषि उत्पादकता को सीमित करने को विवश कर रहे हैं, इनमें मुख्य कारक हैं–

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गुजरात	1680570	541430	2222000
उत्तर प्रदेश	21989	1346971	1368960
महाराष्ट्र	184089	422670	606759
पश्चिम बंगाल	441272	0	441272
राजस्थान	195571	179371	374942
तमिलनाडु	13231	354784	368015
आंध्र प्रदेश	77598	196609	274207
हरियाणा	49157	183399	232556
बिहार	47301	105852	153153
पंजाब	0	151717	151717
कर्नाटक	1893	148136	150029
ओडिसा	147138	0	147138
मध्य प्रदेश	0	139720	139720
अंडमान निकोबार	77000	0	77000
केरल	20000	0	20000
जम्मू – कश्मीर	–	17,500	17,500
dqy	2956809	3770659	6727468

[kkjh feêh dk xBu

वह प्रक्रिया जिसके द्वारा मिट्टी खारी होती है उसको शेले नायीजेस्न प्रक्रिया कहते हैं। शुष्क और अर्ध–शुष्क जलवायु में खारी मिट्टी का गठन होने का कारण सिर्फ कम वर्षा उपलब्ध होना ही नहीं है। इसके साथ–साथ उच्च वाष्पीकरण का होना भी खारी मिट्टी के गठन में बराबर हिस्सेदार है क्योंकि कम वर्षा होने के करण घुलनशील लवण पानी के साथ जड़ क्षेत्र से नीचे नहीं जा पाते बल्कि उच्च वाष्पीकरण होने के कारण घुलनशील लवण पानी के साथ–साथ ऊपर आ जाते हैं और जमीन की सतह पर जमा हो जाते हैं। प्रतिबंधित जल निकास भी आमतौर पर मिट्टी के शेले नायीजेस्न के लिए जिम्मेदार होता है। इसका मुख्य कारण एक उच्च भूजल तालिका या मिट्टी की कम पारगम्यता की उपस्थिति का होना माना जाता है। मिट्टी की कम पारगम्यता के कारण मिट्टी के अन्दर पानी आसानी से नहीं जा पाता है और जलनिस्तारण की समस्या पैदा हो जाती है। कम पारगम्यता एक प्रतिकूल मिट्टी की बनावट या संरचना या परतों की उपस्थिति का नतीजा हो सकती है। हालांकि चट्टानों और प्राथमिक खनिजों का अपक्षय सभी लवण का मुख्य स्रोत होता है।

- अतिरिक्त घुलनशील लवणों का संचय और मिट्टी में क्षारीयता।
- एसिड सल्फेट मिट्टी का प्रभुत्व, मिट्टी में विषाक्तता और पोषक तत्वों की कमी।
- तटीय क्षेत्रों में समुद्री जल की घुसपैठ।
- ज्वारीय पानी से मिट्टी की सतह पर आवधिक पानी का सैलाब।
- कई क्षेत्रों में भारी या कठोर मिट्टी कि बनावट और मिट्टी में पानी के रिसाव में कमी।
- मिट्टी का कटाव और अवसादन।
- उच्च जनसंख्या घनत्व इत्यादि।

पद्धति में बदलाव किया जाता है जैसे कि प्राकृतिक जंगल, वनस्पति या परती पड़ी हुई जमीन में अनाज की खेती प्रणाली की शुरूआत के लिए भूमि को उपयोग में लिया जाए। जब पानी लगातार खारे अवसादों से गुजरता हुआ जमीन में रिसाव करता है तो कुछ समय के बाद अभेद्य क्षैतिज परतों से रोक दिया जाता है। लगातार यह प्रक्रिया होने के कारण पानी जमीन में पार्श्वतः (आड़ा–तिरछा) बहने लगता है और धीरे–धीरे मिट्टी की सतह तक पहुंच जाता है। इसके बाद पानी का वाष्पीकरण होने के कारण लवण जमीन की सतह पर जमा हो जाते हैं।

खारी मिट्टी के गठन के लिए जिम्मेदार प्रमुख कारक इस प्रकार हैं–

[kkjh Hkwty dk iz;ksx

भूजल में घुलनशील लवणों की मात्रा काफी ज्यादा पाई जाती है जोकि भूवैज्ञानिक पदार्थों की प्रकृति और गुणों पर निर्भर करता है। सिंचाई पानी में उच्च लवणता होने के कारण जड़ क्षेत्र में लवणों की वर्धनता पैदा हो जाती है। खासकर यह तभी होता है जबकि मिट्टी की आंतरिक जल निकासी या लीचिंग प्रतिबंधित हो या वर्षा और लागू सिंचाई की मात्रा अपर्याप्त हो।

flapkbZ ikuh

उचित प्रबंधन (जल निकासी और लीचिंग सुविधाओं की कमी) के बिना खेत में सिंचाई करने से भूजल स्तर ऊपर आ जाता है और मिट्टी की सतह पर नमक की मात्रा बढ़ जाती है।

[kkjk fjlko

ऐसी परिस्थिति अत्यधिक लीचिंग और कम वाष्पीकरण होने का परिणाम है जोकि उन जगहों पर होती है जहां पर फसल

lenz dh ikuh dk izos'k

जमीन में लवणता की समस्या की वजह समुद्री लहर, भूमिगत जलभृतों और हवा परिवहन के माध्यम से नमक स्प्रे के द्वारा समुद्र के पानी के प्रवेश से भी होती है। पृथ्वी की सतह पर समुद्री तलछट के माध्यम से समुद्र से घुलनशीन लवणों का स्थानांतरण लगातार भूमि और समुद्र के बीच होता रहता है। अर्द्धशुष्क क्षेत्र, जहां की कृषि पूर्ण रूप से वर्षा पर आधारित है, वहां पर लवणता की गंभीर समस्या पैदा हो जाती है। यदि वर्षा और वाष्पीकरण लगभग बराबर हो और जड़ क्षेत्र में घुलनशील लवण समुद्री अवसाद या अन्य स्रोतों से मौजूद हो।

fjlko

सिंचाई चैनलों से रिसाव, फसलों की वाष्पीकरण जरूरतों से अधिक मात्रा में सिंचाई का इस्तेमाल किया गया हो और किसी क्षेत्र में नए विकास कार्य के द्वारा प्राकृतिक जल निकासी में अवरोध भूजल में महत्वपूर्ण योगदान करता है। ये अतिरिक्त अवभूमि भूजल में जल–स्तर बढ़ा देते हैं और जब जल–स्तर

1–2 मीटर हो जाता है तब मिट्टी की सतह से वाष्पीकरण जड़ क्षेत्र में लवणता की समस्या करने में महत्वपूर्ण भूमिका निभाता है।

yo.k dk iufoZrj.k

लवणों का स्थानीयकृत पुनर्वितरण अक्सर लवणता समस्याएं पैदा करने का एक महत्वपूर्ण परिणाम है। घुलनशील लवण उच्च ऊंचाई से कम ऊंचाई वाले क्षेत्रों में, गीले से शुष्क क्षेत्रों, सिंचित से असिंचित खेतों में स्थानांतरित होने लगते हैं। इसके साथ–साथ लवण (साल्ट) सड़को और रेल लाइनों के निर्माण या अन्य विकासात्मक गतिविधियों के निर्माण की वजह से प्रतिबंधित प्राकृतिक जल निकासी के साथ क्षेत्रों में जमा होने लगता है। इसके बाद इस स्थिर जल का वाष्पीकरण मिट्टी की सतह पर लवण की काफी मात्रा छोड़ देता है।

eyHkkr moZjdk dk vR;f/kd mi;ksx

सोडियम नाइट्रेट (NaNO3) और बेसिक स्लग जैसे बुनियादी उर्वरकों का उपयोग भी मृदा लवणता में विकास करते है।

ued iHkkfor feêh dh leL;k,a

खारी मिट्टी पौधों की वृद्धि में विभिन्न कारणों से बाधक है–

- मिट्टी आमतौर पर बंजर होती है लेकिन उत्पादन की क्षमता रखती है।

- खारी मिट्टी का गुणांक कारक बहुत अधिक होता है।
- मिट्टी में नमी की उपलब्धता काफी कम होती है।
- पौधे की जड़ें आमतौर पर जड़ कोशिकाओं में झिल्ली के माध्यम से जल अवशोषित करती हैं।
- असमसका (ओसमोसिस) एक प्राकृतिक प्रक्रिया है जिसमें पानी एक अर्द्धपारगम्य झिल्ली के माध्यम से निम्न–स्तर नमक स्तर घोल से उच्च–स्तर की तरफ स्थान परिवर्तन करता है।
- यह प्रक्रिया तब तक चलती है जब तक कोशिकाओं में पूर्ण संतुलन स्थापित हो जाता है।

जब मिट्टी के घोल में अत्यधिक लवण हो जाते हैं तो मिट्टी में दबाव कोशिका रस की तुलना में बढ़ जाता है। यह प्रभाव मिट्टी में पानी पकड़ के संभावित बलों को बढ़ाता है और इसे पौधे की जड़ों द्वारा नमी निकालने के लिए और अधिक कठिन बनाता है। यदि फसल चक्र के दौरान सूखे जैसी परिस्थिति आ जाती है तो लवणों की सांद्रता ज्यादा होने के कारण जड़ों से पानी मिट्टी में आने लगता है और कुछ समय के बाद पौधा मरने लगता है।

उच्च नमक सांद्रता होने के कारण पौधों को पानी अवशोषित करने के लिए सक्रिय साइटों से नमक बाहर करने के लिए अधिक ऊर्जा खर्च करनी पड़ती है। इसके साथ–साथ आवश्यक तत्वों की भी कमी हो जाती है।

जब घुलनशील लवण की सांद्रता उच्च–स्तर तक बढ़ने लगती है तो सीधे विषाक्त प्रभाव शुरू होने लगता है और बीज अंकुरण निषेध जड़ आघात जैसी समस्या पैदा या खड़ी हो जाती है।

uedhu feêh dk izca/ku

LØfix

यांत्रिक तरीकों से मिट्टी की सतह पर जमा हुआ नमक खुर्पी या फावड़े की सहायता से खुरच करके हटाया जा सकता है। किसानों ने इस प्रक्रिया का सहारा लिया है लेकिन इससे

सीमित सफलता मिलती है। इस विधि से अस्थायी रूप से फसल विकास में सुधार हो सकता है, लेकिन इसके बाद भी एक बड़ी समस्या बनी रहती है।

fuLrC/krk

जमीन की सतह पर एकत्रित नमक की मात्रा को पानी की निस्तब्धता (Flushing) द्वारा भी कम किया जा सकता है। यह विधि ऊपर दी हुई विधि से ज्यादा कारगर है।

yhfpx

यह प्रक्रिया अब तक मिट्टी में जड़ क्षेत्र से लवण दूर करने के लिए सबसे प्रभावी साबित हुई है। इस प्रक्रिया में मिट्टी की सतह पर ताजा पानी भर दिया जाता है और उसको रिसाव के लिए छोड़ दिया जाता है। यह प्रक्रिया उसी परिस्थिति में कारगर होती है जहां मिट्टी में नमी की मात्रा कम एवं जल–स्तर गहरा होता है। गर्मियों के महीनों के दौरान यह प्रक्रिया कम प्रभावी होती है क्योंकि पानी बड़ी मात्रा में वाष्पीकरण से उड़ जाता है। लेकिन कहीं–कहीं यह गर्मियों के महीनों के दौरान ही प्रभावी होती है क्योंकि इस समय मिट्टी में नमी की मात्रा काफी कम एवं जल–स्तर काफी गहरा होता है जिसके कारण घुलनशील लवण जड़ क्षेत्र से काफी नीचे चले जाते हैं।

yo.kh; enk e t y ic/kd

Hkfe dh rS;kjh % जमीन पूरी तरह से समतल होनी चाहिए जिससे कि जल निकास आसानी से हो सके और छोटे–छोटे गड्ढों में पानी इकट्ठा न हो सके। इससे क्षेत्र में समान रूप से सिंचाई पानी लागू करने में मदद मिलेगी। इसके साथ–साथ बीज का अंकुरण और फसलों के विकास में बेहतर सहायता मिलेगी। जमीन की तैयारी के समय यह जरूर ध्यान में रखे कि भारी बनावट की मिट्टी में समसामयिक गहरी जुताई करने से जमीन के अन्दर पानी का रिसाव अच्छा हो जिसके कारण सिंचाई देने से घुलनशील लवण आसानी से जड़ क्षेत्र से नीचे चले जाते हैं।

vudy ekSle % सर्दी के मौसम में उगाई जाने वाली फसलें

(गेहूं, सरसों और जौ), गर्मी में उगाई जाने वाली फसलों (बाजरा, ज्वार और मूंगफली) से ज्यादा खारे पानी का उपयोग करने के लिए सहिष्णु होती हैं। इसके अलावा, मिट्टी प्रोफाइल मानसून लीचिंग के बाद लवण से लगभग मुक्त रहती है और जमीन से वाष्पीकरण भी सर्दी के मौसम में कम होता है जिसके कारण लवण मिट्टी की सतह पर जमा नहीं हो पाते हैं।

flapkbZ vrjky % कम अंतराल में की गई सिंचाई लंबे अंतराल में की गई सिंचाई की तुलना में बेहतर होती है क्योंकि पूर्व मामले में, मिट्टी में पानी की मात्रा एक सीमित दायरे के भीतर उतार–चढ़ाव की अनुमति देती है जो मिट्टी के संभावित मैट्रिक्स क्षेत्र की क्षमता के करीब होता है, ऐसे मामलों में मिट्टी में पानी की उच्च क्षमता के हानिकारक प्रभाव नमकीन मिट्टी में कम हो जाते हैं और इसलिए लवणता संकट की विशेषताओं को दूर किया जा सकता है।

QlyksZ dk fu"kpu % सामान्यतया मिट्टी में कम कार्बनिक पदार्थ होने के कारण यह बहुत जरूरी है कि फसल उत्पादन को बढ़ावा देने के लिए उपयुक्त उर्वरक जमीन में डाली जाए। पोटाश उर्वरक मृदा लवणता के तहत एक अतिरिक्त लाभ पहुंचाता है और सोडियम तत्व के अवशोषण को कम करके पोटाश तत्व के अवशोषण को बढ़ावा देता है जिससे कि फसल की उत्पादकता बढ़ जाती है।

Qkb:Vkjeh:Mh;:Lu % जिन क्षेत्रों में पानी से लवणों की लीचिंग संभव नहीं है उन क्षेत्रों में मध्यम लवणता को सहन करने वाली फसलें बोना एक व्यवहार्य विकल्प हो सकता है और गहरी जड़ों वाले पौधे, जिनकी वाष्पीकरण क्षमता बहुत अधिक हो, लगाने चाहिए क्योंकि ये जैविक जल निकासी का कार्य करते हैं एवं जो जमीन पूरी तरह से खराब हो चुकी हो, जिसका कोई प्रबंधन न किया जा सके, उस जमीन में उच्च सहिष्णुता वाले पेड़ एवं झाड़ियों वाली प्रजातियों को लगा देना चाहिए।

Qly ifrLFkkiu % अधिकांश कृषि फसलों का जड़ क्षेत्र में घुलनशील लवणों की सहिष्णुता के प्रति व्यवहार अलग–अलग होता है इसलिए ऐसी फसलों/किस्मों का चयन करना चाहिए जो खारे पानी की सिंचाई जैसी परिस्थितियों में संतोषजनक पैदावार का उत्पादन कर सकें क्योंकि सबसे कम और सबसे ज्यादा संवेदनशील फसलों के बीच सहिष्णुता में अंतर 8–10 गुना तक हो सकता है। इसलिए मध्यम से उच्च सहिष्णुता और कम पानी की जरूरत वाली फसलों का चयन करना चाहिए। उदाहरण के लिए सरसों एक नमक सहिष्णु फसल है और इसको बोने के बाद एक –दो सिंचाई की ही आवश्यकता होती है।

vo'k"k ic/ku % मिट्टी की सतह पर फसल अवशेष डालने से पानी का वाष्पीकरण सीमित या घट जाता है जिसके कारण लवण पानी के साथ जमीन की सतह पर नहीं आ पाते हैं। ऐसा करने के लिए कम से कम 30–50 प्रतिशत मिट्टी अवशेषों से ढकी हुई होनी चाहिए। फसल अवशेषों के तहत मिट्टी गीली रहती है और वर्षा के पानी को लवण की लीचिंग के लिए अधिक प्रभावी रूप से अन्दर जाने देता है। ड्रिप सिंचाई के साथ इस्तेमाल प्लास्टिक पलवार भी प्रभावी ढंग से वाष्पीकरण को कम करती है। उपसतह ड्रिप सिंचाई जड़ क्षेत्र से लवणों को दूर कर देता है जिसके कारण अंकुरित पौधे और पौध की जड़ों पर हानिकारक प्रभाव कम हो जाता है।

Q0okjk flapkbZ % पानी देने की नियंत्रित दर होने के कारण सतह सिंचाई की तुलना में नमक संचय फव्वारा सिंचाई में कम होता है। फव्वारा सिंचाई में पानी सूक्ष्म छिद्रों के माध्यम से जबकि सतह सिंचाई पद्धति में ज्यादा पानी दरारें और स्थूल छिद्रों के माध्यम से जमीन के अन्दर जाता है।

fMªi flapkbZ % ड्रिप सिंचाई नमक या सोडियम संबंधी पानी के लिए बेहतर प्रबंधन में कुशल है। ड्रिप सिंचाई पद्धति में पानी लगातार जड़ क्षेत्र को गीला बनाए रखता है जिसके कारण उच्च मैट्रिक्स क्षमता और कम नमक संचय हो पाता है और अलग से लीचिंग की जरूरत नहीं रहती है।

rktk vkj [kkjk ty dk l;Dr mi;kx % कहीं–कहीं अच्छी गुणवत्ता वाला पानी सिंचाई के लिए उपलब्ध होता है

लेकिन पर्याप्त मात्रा में न होने के कारण अधिकतम फसल उत्पादन प्राप्त करने के लिए एक रणनीति के तहत मध्यम लवणता की सिंचाई का पानी प्राप्त करने के लिए अच्छी गुणवत्ता वाले पानी के साथ उच्च लवणता वाले पानी का मिश्रण फसल के मौसम में इस्तेमाल के लिए लिया जा सकता है। वैकल्पिक रूप से अच्छी गुणवत्ता वाले पानी अधिक महत्त्वपूर्ण चरणों में फसल की अच्छी वृद्धि के लिए सिंचाई में इस्तेमाल किया जा सकता है जैसेकि अंकुरण के समय और उच्च लवणता वाले पानी को फसल की उच्च सहिष्णुता के समय काम में लिया जाना चाहिए।

[kkjk ikj d mi;kx e lko/kkfu;k

- सिंचाई का जल फसल की आवश्यकता से अधिक मात्रा में लागू किया जाना चाहिए जिसके कारण जड़ क्षेत्र में एकत्रित अधिशेष लवण पानी के साथ नीचे चले जाएं।
- बुवाई से पहले प्रचुर सिंचाई करके अतिरिक्त लवणों की विशेष रूप से लीचिंग कर देनी चाहिए।
- मिट्टी बलुई या रेतीली, छिद्रपूर्ण और पारगम्य होनी चाहिए जिससे कि लीचिंग ऑपरेशन आसानी से हो सके। दोमट मिट्टी में लीचिंग आसानी से नहीं होने के साथ–साथ तेज दर से खारी हो जाने की संभावना भी रहती है।
- वाष्पीकरण प्रक्रिया को कम किया जाना चाहिए। यदि यह अनियंत्रित रहती है तो नीचे से पानी के साथ नमक जड़ क्षेत्र में पुनर्भरण होगा।
- जमीन में जल–स्तर नीचा होना चाहिए जिसके कारण जल निकास आसानी से हो सके और उस क्षेत्र में पानी और नमक की रिचार्जिंग न हो पाए।
- भूमि ठीक से वर्गीकृत और समतल होनी चाहिए।
- मिट्टी की भौतिक स्थिति जुताई और अतिरिक्त कार्बनिक पदार्थ मिला करके अच्छी बनाए रखनी चाहिए।
- यदि सिंचाई पानी में सोडियम की मात्रा ज्यादा होने के कारण फसलों को नुकसान हो रहा हो तो मिट्टी में चूना मिला देना चाहिए।
- फसल के लिए उर्वरक आवेदन की एक संतोषजनक और संतुलित अनुसूची फसलों के अनुकूल विकास को प्रोत्साहित करने के लिए डालनी चाहिए।
- बुवाई के लिए नमक सहिष्णु फसलों का ही चयन करना चाहिए।

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