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THE  HINDU



Kurukshetra

A JOURNAL ON RURAL DEVELOPMENT

Science

Reporter



YOJANA

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Gist of

THE HINDU

⇒ JUDGES HAVE TO WATCH THEIR SCORECARD

The Indian Supreme Court is an extraordinarily powerful institution in the world. It can make and unmake laws; it can keep the executive accountable, and seek to ensure the autonomy of institutions. It can rewrite the Constitution the way it wants, through its creative interpretation yet remain largely unaccountable for its omissions and commissions. Its collegium has the responsibility to choose judges to fill its own vacancies, but it sees little merit in adopting an open and transparent process while exercising it.

As a result, very little is known about the merits of a judge, before he or she is appointed to the Supreme Court, unless there are serious allegations damaging to the judge's integrity. There is a vast pool of post-retirement jobs that awaits a retiring judge from the Supreme Court, in the form of membership of statutory tribunals and commissions, yet there is no mechanism to evaluate the suitability of former judges to these bodies.

- The Government's proposal to nominate the former judge of the Supreme Court, Justice Cyriac Joseph, to the National Human Rights Commission (NHRC), has brought into focus the issue of performance-evaluation of a judge.
- While the members representing the Government on the NHRC selection committee appear to have favoured his nomination, the two members belonging to the Opposition, Ms Sushma Swaraj and Mr. Arun Jaitley, have submitted dissenting notes pointing to an adverse report of an

intelligence agency about the unsuitability of the proposed nominee on the basis of his tenure at the Supreme Court.

⇒ IS THE NEW TB DRUG ALREADY BEING MISUSED?

- Bedaquiline was the first TB drug to be discovered in more than 40 years, and the first one specifically for multi-drug resistant TB (MDR-TB). MDR-TB arises when the *M. tuberculosis* bacteria become resistant to two commonly used first-line TB drugs — isoniazid and rifampicin.
- But less than six months after FDA approved the drug under its accelerated approval programme, is the drug a potential candidate for misuse by doctors in India? Will it in any way result in patients developing drug resistance?
- It is too early to say this with any certainty, but the system in India appears to have the perfect conditions to make this possible. The drug is yet to be approved for use in India, and WHO and India have not yet drawn up guidelines to help doctors treat MDR-TB patients with this drug.
- But some private doctors here have already started prescribing this drug to their patients by importing it.
- Though the Drug Controller General of India is responsible for issuing permits for import, it cannot deny permits to doctors if it is to treat patients.
- Already, the prevalence of MDR-TB among new patients is 2-3 per cent. In the case of previously treated patients, the prevalence

is 11-17 per cent. Incidence (number of cases detected in a year) of MDR-TB is about 99,000. But these are not a true reflection of MDR-TB incidence/prevalence — MDR-TB patients approaching private doctors are not counted.

“Of this, only a fraction of patients was diagnosed till 2011. From 2012 onwards it started improving,” she says. Between 2,000 and 3,000 MDR-TB patients were put on treatment in 2011. In 2012, around 20,000 MDR-TB patients were put on treatment.

⇒ AT WTO, A DEFENDER OF THE SOUTH

The World Trade Organization (WTO) received a new leader, Roberto Azevêdo of Brazil. The election of Azevêdo is significant not because he is the first person from the Global South to lead the WTO — that honour goes to Thailand’s Supachai Panitchpakdi, who ran it from 2002 to 2005. But unlike Supachai, Azevêdo comes with the backing of significant new blocs of the Global South, notably the BRICS grouping which put its heft behind his candidacy. This is the first time that a candidate of the Global South won against someone backed by the European Union, which in this instance had put its support behind Mexico’s former Trade Minister Herminio Blanco. The BRICS bloc was able to secure sufficient investment in Azevêdo, Brazil’s representative to the WTO since 1997.

Azevêdo is a veteran of Brazil’s Itamaraty, its foreign ministry. A career diplomat, he spent the most mature part of his working life at the WTO where he earned a reputation as being a defender of the Global South against the North’s very focused attempt to use the WTO as an instrument of its interests. France’s Pascal Lamy led the WTO into the doldrums, as the Doha Development Agenda stalled because of Northern obduracy on its agricultural subsidy regime and Southern reticence to adopt the strict intellectual property framework favoured by the North. No wonder that Azevêdo said last week that the WTO is a “sick patient.”

Brazil’s President Dilma Rousseff said that Azevêdo would work to create a “more dynamic and fair” world economic order. Azevêdo has pledged to work for all countries, but he also said that “members

in general are more trusting of a system where they think they can be represented at the top, in terms of geography and level of development.”

In the halls of the WTO, Azevêdo is known as a fair-minded person who has indeed played a very positive role to defend the rights of the South against the heavy-handed positions taken by the North. Multilateralism, he says, is in his DNA. If the backing of the BRICS continues, and if Azevêdo is able to move in a multilateral way, a positive agenda might finally emerge from the WTO.

⇒ KEEPING CHILDREN OUT OF LABOUR

- The economic vulnerabilities that confront households in the current sluggish recovery from the global meltdown are aggravating the fight against child labour, says the International Labour Organisation. Its latest report emphasises the need for universal coverage of at least a minimum level of social security to help some 215 million working children.
- Half that number is trapped in the worst forms of child labour — work akin to slavery, debt bondage, child prostitution and hazardous occupations harmful to health and safety. To be sure, the number of child workers did drop by some 30 million in the last decade.
- But job losses in the adult population in the wake of the global financial crisis and shocks related to crop failure and recurrent freak weather patterns are threatening a reversal of recent gains. The report collates findings from various studies that establish a clear correlation between adverse macro-economic indicators and the recourse to child labour. Correspondingly, cash transfers are known to prove effective in reducing child labour in Asia and Latin America, subject to supply-side conditions such as the availability of education facilities. Similarly, in many African countries where parents have been lost to the HIV/AIDS epidemic, social protection measures such as health insurance, targeted at the elderly, ensure uninterrupted school attendance among children.

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Gist of The Hindu

- It is abundantly clear then that the elimination of child labour is predicated upon making progress on many fronts. Getting kids to go to school, a key priority that drove the abolition campaign a decade ago, is obviously a necessary but not sufficient condition for the eradication of child labour. Surely, there has been a surge in enrolments in recent years and there has even been some talk of devising ways to retain wards beyond primary school. But all of this presupposes a sound overall policy framework to be sustained over the long term. A scenario where as much as 75 per cent of the global population (more than 5 billion people) has no access to comprehensive social protection, as per ILO estimates, hardly inspires confidence in the capacity of countries to kick start the lives of millions. To make headway, governments must be prepared to spend more. A hugely influential 2010 study which claimed that public debt ratios in excess of 90 per cent of gross domestic product would automatically lead to a decline in growth has recently been exposed as relying on erroneous calculations, a fact conceded by its authors. Several governments that have so far persisted with crippling austerity measures to cut back on welfare spending, with severe socio-political ramifications, should reconsider their stance.

⇒ ACCESS TO THE PRINTED WORD

Talks on a global treaty to give copyright exemptions for the blind and print disabled are inching close to fruition at the World Intellectual Property Organisation (WIPO), notwithstanding sticky areas in the draft text. The half-a-decade-long negotiations at the relevant standing committee at the world body concluded last month, paving the way for a diplomatic conference in June in Morocco to fine-tune the law. Deliberations were deadlocked for months on the question of balancing the need to extend cross-border access to reading material with the interests of copyright holders. Developed nations have been lobbying hard for assurances that

accessible formats of books were not already in circulation whenever fresh material is transferred to recipient states. Developing countries have legitimate concerns in terms of the practical difficulties that such monitoring — principally by non-government organisations — would entail. It is relevant to note here that many countries already have in place suitable amendments to their domestic copyright laws to address the special needs segment. It is thus a matter of establishing the mechanisms for applying the same principle internationally. Though concerns exist over the potential unauthorised use of copyright exemptions in the developing world, the rights of creators must be weighed against the larger interests of equity and justice. The harsh reality for disabled end-users the world over is that some 95 per cent of published literature today is beyond their reach.

The refusal by western countries, in particular the United States, to move forward on the treaty obviously has to do with concerns over the general lack of protection against piracy in the developing world. But the message from the WIPO talks in Geneva is also that the advanced world can't ignore the needs of the disabled elsewhere for too long. With disability likely to figure high among global development priorities post-2015, the availability of accessible information would prove a key determinant of the educational and employment attainments of the disabled. Moreover, it does not stand to reason that while the rights of disabled people for access to the physical environment has acquired wide currency, access to published information and knowledge through accessible formats should continue to be denied.

⇒ WORLD HERITAGE SITES STATUS SOUGHT FOR 6 RAJASTHAN FORTS, HIMALAYAN PARK

India has nominated a group of six hill forts in Rajasthan and the Great Himalayan National Park in Himachal Pradesh as candidates for World Heritage Sites this year. UNESCO's World Heritage Committee at its meeting in Cambodian capital Phnom Penh next month will decide on conferring the status on them.

The hill forts at Chittorgarh, Kumbhalgarh, Ranthambore, Gagron, Amber, and Jaisalmer are excellent examples of Rajput military architecture, which are found in palaces, temples, memorials and

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even in villages. Built between 13th and 19th centuries, these forts are unique to this region and creatively use the landscape to increase protection.

The Great Himalayan National Park, spread over 75,400 hectares, is located on the western part of the Himalayan mountains in Kullu District. It is among the most scenic sites in the country and rich in biodiversity. It is home to 25 forest types, supports 805 kinds of plants and hosts 31 species of mammals and 209 sort of birds.

Going by a report of the International Union for Conservation of Nature (IUCN), which evaluates nominations for natural sites, it is unlikely that the World Heritage Committee would inscribe the Himalayan Park as a World Heritage Site. The IUCN has said the delineation of the park is disjointed. It recommended that the intervening land be added to the park to create a contiguous area. It suggested that the rights of local communities be accommodated and integrated in the management plan.

The five Rajasthan forts were nominated last year too, but UNESCO rejected them. This year, the government added the Jaisalmer fort, reworked the documents and renominated the five. The International Council on Monuments and Sites (ICOMOS), which evaluates the cultural properties for UNESCO, inspected the sites last year, and their final recommendation will be known on May 17. India has 29 world heritage sites — 23 cultural and six natural properties.

⇒ **BETWEEN MASS**

HUNGER AND BURSTING GRANARIES

The hallmark of the National Food Security Bill 2011 is that if implemented it will translate into India's first ever right to food legislation, guaranteeing food as a justiciable, legal entitlement to its people. However, in its current form, the Bill fails to evolve a robust understanding of food security — one in which “food” is valued as a basic fact of life, and “security” translates into a life lived with dignity, with individuals as active seekers of their entitlements.

The repeated use of the word “entitlement” in the Bill makes it possible to conceptualise food security as a right. It allows the Government to speak convincingly of an ostensible shift from a welfare-

based to a rights-based approach. The Bill, however, defines food security as *the supply of entitled foodgrains and meal*. Such a narrow definition assumes the individual to be a passive recipient of a dole and not a proactive claimant of entitlements. Moreover, it sharply contrasts with the understanding of “entitlements” advanced by the Right to Food Campaign (RTFC) — a movement that sculpted the passage for the birth of the Food Bill.

The RTFC emerged in 2001 as an outgrowth of the civil writ petition filed in the Supreme Court by the People's Union of Civil Liberties (PUCL), Rajasthan, demanding that the country's rotting foodgrain stocks be used to prevent mass hunger and acute starvation. The petition emphasised the constitutional basis of the “right to food” flowing from Article 21 that guarantees the fundamental right to life. This petition, also known as the landmark *PUCL vs. Union of India* or the “right to food” case, is ongoing as a public interest litigation.

More Inclusive

The RTFC places the “right to food” in a wider, more inclusive bed of “entitlements.” Its shared premise is that to address the structural roots of hunger, the “right to food” should be read together with “entitlements” concerning livelihood security, equitable rights over resources such as land, water and forests, sustainable food systems, right to information, education and health care, social inclusion and non-discrimination. Over the years, it has publicly shared and structured this premise through a legal and street advocacy, grassroots engagement and policy advocacy.

In fact, the universalisation of cooked midday meals in schools across India was a direct result of the interim order under the “right to food” case and campaigns around the judgment, steered by the RTFC.

It is against this background of steady advocacy that the Congress, after its re-election in 2009, acted on its electoral promise to legislate the right to food.

The United Progressive Alliance-II tasked the Empowered Group of Ministers (EGoM), headed by then Finance Minister Pranab Mukherjee to draft the National Food Security Act.

The Bill tabled in Parliament in 2011 was a whittled down version of a visionary draft prepared by the National Advisory Council. It was referred to the Parliamentary Standing Committee on Food, Consumer Affairs and Public Distribution. After a State Food Minister's meeting to deliberate the committee's recommendations in February this year, a revised version of the Bill was cleared by the Cabinet the following month. Amendments to the Bill were introduced in the Lok Sabha on May 2, which now urgently await discussion and passage.

Columnists in economic and business dailies have been quick to dismiss the Bill as a "fiscal nightmare." The Food Minister, who argues that India can no longer afford to forgo the historic opportunity of enacting a National Food Security Act, justly rubbishes this discourse.

For and against

Briefly, the Bill may be lauded for stipulating formidable reforms to the PDS, maternity entitlements for lactating and pregnant mothers and expanding coverage, respectively, to 75 and 50 per cent of the population in rural and urban areas.

Supporters of the Bill, however, are unhappy about the continuation of targeting in PDS, reduction in monthly per capita PDS grain entitlement from 7 kg to 5 kg, omission of the health and preschool education components of ICDS, absence of special entitlements for the most vulnerable sections of the population (persons in destitution or starvation, the elderly, persons with disabilities and single women), proposed introduction of cash transfers and unsatisfactory grievance redress mechanisms, among others. But the bigger concern is that a robust understanding of the "right to food," premised on hunger has been weakened to mean a passive "right to receive" whatever the state wants to give in the name of food security.

Reframing Food Security

The successive erosion of the essence of the "right to food" through multiple drafts has divorced it from the context of a silent emergency of malnutrition and hunger in which the RTFC first rooted it. This is evident in the absence of the phrase "right to food" from the text of the Bill.

While noteworthy reforms to the PDS have been duly centre-staged, the reference to improvements in agriculture, water and sanitation, health care and decentralised procurement and storage, is only tangential (buried in the last schedule of the Bill). Any framing of food security cannot ignore the moral implications of hunger and must argue for a better understanding of the social, beyond the legal and economic, to arrive at a society unconditioned by the fear of powerlessness that hunger can impose.

⇒ CABINET NOD FOR LOANS AT LOW INTEREST FOR WOMEN SELF HELP GROUPS

In order to financially strengthen Women Self Help Groups (SHGs) across India, the Union Cabinet has approved key changes to the National Rural Livelihoods Mission (NRLM), aiming to eradicate poverty in villages by empowering women. Rural Development Minister Jairam Ramesh announced that over 25 lakh Women SHGs will now be provided bank loans at an interest rate of seven per cent.

In accordance with the announcement made by Finance Minister P. Chidambaram in the 2012-13 Budget, the Union Cabinet on May 1 approved the provision of interest subvention for Women SHGs operating under the NRLM, ensuring that they shall avail loans up to Rs. three lakh at an interest rate of seven per cent per annum.

Initially, the scheme will be started as a pilot project in 150 districts, including the 82 Integrated Action Plan districts affected by naxal violence; and in the rest of the States, 75 per cent of the cost would be borne by the Central government and 25 per cent by the States.

"In 150 districts, all Women SHGs, which are now getting bank loans at 11.5 to 14 per cent rate of interest, will now get it at seven per cent rate of interest."

⇒ AN ECOSYSTEM TO SAVE, OR SQUANDER

This is a challenging time in India's development history where a number of tenets of environmental governance are being questioned by the imperative of growth. Environmental governance in India is under assault, and is thus in need of both fresh thinking, and a new focus, based on outcome

and results. The Western Ghats are no ordinary ecosystem. They constitute the water tower of peninsular India, providing water to 245 million people and draining a large part of the land surface of India. They are also a treasure trove of biodiversity. The Convention on Biological Diversity confers sovereign rights over these elements of biodiversity for which we are a country of origin. India can play an important role in research relating to such biodiversity elements and claim a share in the commercial profits flowing out of their use. The elements of value not only include medicinal plants and cultivated species of plants and their wild relatives, but seemingly worthless creations such as spider cobwebs, which turn out to be sources of a new kind of silk stronger than steel. Notably enough, such elements of value are by no means confined to natural forests, but occur everywhere across the Western Ghats, underscoring the need to maintain connectivity amongst biodiversity rich habitats.

Hostility

Today, however, it is estimated that only seven per cent of the Ghats' primary vegetation survives and there are many threatened species, of which 51 are critically endangered species. It was in this context of threats and in response to demands by people of the Western Ghats, that the Western Ghats Ecology Expert Panel (WGEEP) was set up in March 2010 by the Ministry of Environment and Forests (MoEF) to assess the state of the Ghats and suggest ways for their "conservation, protection and rejuvenation" through a process of consultations with State governments, industry, and local people. Post submission of the report in August 2011, its "quarantine" until May 2012, and its subsequent release, the panel presumed that a more detailed public discussion would follow its translation into regional languages, and then finalised. This did not happen. Instead, an adversarial environment emerged or was created, resulting in hostility to the WGEEP report. State governments protested that development will be affected, without a careful reading of what it allows, promotes and seeks to protect. They chose to ignore, as did the MoEF, the tentativeness of the panel's recommendations, the provisional nature of zone boundaries and sectoral

guidelines, to be used for informed and inclusive deliberations, a point made repeatedly but which continues to be misrepresented. However, instead of there being a larger debate around the WGEEP report, the Ministry chose to appoint a High Level Working Group (HLWG) whose mandate it was to examine the WGEEP report "in a holistic and multidisciplinary fashion."

We would like to comment on three aspects of this examination: (i) the process followed, (ii) analytical approach adopted, and (iii) recommendations made.

The Process

The stakeholder comments received by the MoEF (1,750 in a population of 50 million in the Working Group States) should have been shared with the panel. Instead, secrecy followed — inexplicable, given that the WGEEP was an MoEF appointed panel, not a fly-by-night operator as seen in the mining regions of the Ghats. The MoEF also summarily rejected the panel's plea that any decision in the matter should be made only after the report is made available to people in regional languages and their feedback obtained. The HLWG's examination of the WGEEP report ought surely to have commenced with a dialogue with the panel. This was not done, but for a meeting with the chairperson and some of the members, very late in the game. Instead, the HLWG had a limited consultative process and finalised the recommendations and submitted its report, without sharing this with the Gadgil Panel, suggesting that the intention was not to make the WGEEP recommendations "implementable," but really to replace it by an alternative framework.

Analytical Approach

The approach adopted for the examination combined a selective review of development issues in the WGEEP report with its own reasoning that insufficiently regarded the Western Ghats as an ecosystem from the perspective of "conservation, protection and rejuvenation." An ecosystem such as the Western Ghats comprises both people and the ecology, and hence WGEEP carried out its mandate using a social-ecological lens. It is misleading then to suggest that the WGEEP did not have local people or

the state's development needs in mind in arriving at its recommendations. What WGEEP did was mainstream into development planning for the districts of the Western Ghats the more long-term needs of the people such as water and ecosystem services.

With this in mind, it suggested not just the graded regulation of the more ecologically harmful activities, but the promotion of more benign, job creating activities, for example, agro and biomass-based industry, regulated ecotourism, industries and services that involve dematerialisation, education hubs, etc. In energy provisioning, it recommended clean energy, "smart" demand side management campaigns, and more equitable distribution policies.

⇒ **ARABIAN SEA:**

WHY MORE CYCLONES IN SOME YEARS

It is a well known climatological fact that during pre-monsoon and post-monsoon seasons in the North Indian Ocean, more cyclones form in the Bay of Bengal compared with the Arabian Sea. Scientists have now discovered why in some years more cyclones form in the Arabian Sea than usual. This is due to a newly discovered Phenomenon (2007) El Nino Modoki — which causes warm moist conditions in the Central Pacific and dry cold conditions in Eastern and western pacific. A more familiar phenomenon, El Nino, was found to suppress cyclone formation in the Arabian Sea.

The findings are results of a study undertaken by a team led by Dr. M.R. Ramesh Kumar, Senior Scientist, National Institute of Oceanography, Goa. The study has been published in the *Natural Hazards* journal.

The reason why El Nino Modoki brings only fewer number of cyclones in the Bay of Bengal is because one of the two descending limbs of the Walker Cell is over the western Pacific and Bay of Bengal. The descending limb causes dry conditions not conducive for cyclone formation. The ascending limb of the Walker Cell, on the other hand, brings rain. Also, an El Nino Modoki creates stronger divergence over the western Pacific and Bay of Bengal compared to El Nino. Divergence (opposite of convergence) means surface winds move away from each other and result in low relative vorticity (rotational flow of

winds). These conditions are not conducive for cyclones. This explains why Bay of Bengal region (close to western Pacific) has fewer cyclones during an El Nino Modoki.

On the other hand, there is large convergence over the Arabian Sea during an El Nino Modoki explaining the large number of cyclones in that region. A statistical analysis of the El Nino and El Nino Modoki years between 1979-2004 was conducted. It was found that there were four El Nino years and seven El Nino Modoki years during this period.

The number of cyclones per year show significant differences indicating that El Nino Modoki years are conducive for cyclone formation over Arabian Sea while El Nino is conducive for cyclones over the Bay of Bengal.

⇒ **WHY THE**

FAILURE IN ALMATY IS A BIG DEAL

The most recent round of nuclear talks between the P5+1 were, by any meaningful measure, a failure. Even as she sought to put the best face possible on the non-outcome in Almaty, Kazakhstan last month, European Union Foreign Policy Chief Catherine Ashton had to acknowledge that western members of the P5+1 and Iran "remain far apart on substance."

Western officials blame the failure either on the Islamic Republic's upcoming presidential election or on that old fallback, Iranian "intransigence." In reality, talks failed because America and its western partners remain unwilling to recognise Iran's right to enrich uranium under international safeguards.

U.S. Strategic Culture

As a sovereign state, Iran is entitled to enrich, if it chooses; as a party to the Nuclear Non-Proliferation Treaty (NPT), it is entitled to do so under safeguards. The NPT explicitly recognises signatories' "inalienable right" to use nuclear technology for peaceful purposes. That this inalienable right includes the right to enrich is clear from the NPT itself, its negotiating history, and decades of state practice, with at least a dozen non-weapons state parties having developed safeguarded fuel-cycle infrastructures potentially able to support weapons programmes.

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If Washington recognised Iran's right to enrich, a nuclear deal with Tehran could be reached in a matter of weeks. As long as Washington refuses to acknowledge Tehran's nuclear rights, no substantial agreement will be possible.

Yet the Obama administration is no closer than its processor to accepting safeguarded enrichment in Iran. This is partly due to pressure from various allies — Israel, Saudi Arabia, Britain, France — and their American supporters, who expect Washington somehow to defy legal principle along with political reality and compel Tehran to surrender its indigenous fuel-cycle capabilities.

But the real reason for U.S. obstinacy is that recognising Iran's nuclear rights would mean accepting the Islamic Republic as a legitimate entity representing legitimate national interests. No American administration since the Iranian Revolution — not even that of Barack Hussein Obama — has been willing to do this.

Washington's unwillingness is grounded in some unattractive, but fundamental, aspects of American strategic culture: difficulty in coming to terms with independent power centres (whether globally or in vital regions like the Middle East); hostility to non-liberal states, unless they subordinate their foreign policies to U.S. preferences (as Egypt did under Sadat and Mubarak); and an unreflective but deeply rooted sense that U.S.-backed norms, legal rules, and transnational decision-making processes are meant to constrain others, not America itself.

Because these attitudes are so fundamental, it is unlikely that Obama will invest the political capital required to bring America's Iran policy in line with strategic reality before his presidency ends. And so the controversy over Iran's nuclear activities will grind on.

⇒ SIXTY YEARS OF A DNA WORLD VIEW

Over the last week, there have been several articles celebrating the passage of 60 years since James Watson and Francis Crick published their paper in *Nature* describing the double helical structure of the DNA molecule. It unleashed a genomic worldview and led to the central dogma of genetics and biology, the linear flow of cellular

information from DNA (deoxyribonucleic acid) to RNA (ribonucleic acid) to protein within cells, which seemed elegant in its simplicity, captured the imagination of many and is by now enshrined in science. Ever since, largely through miscommunication by many parties, "there is a gene for condition xyz" has been taken to mean, "the gene causes xyz and the gene alone causes it." This idea has trapped the general thinking on genetics in numerous ways, building an edifice for a molecule that supposedly unzips all by itself, self-replicates, has the blueprint for all the components of a single cell and organism, causes all diseases and defines all characteristics. Its power and hold are strong also because the idea and its implications fit like a glove within culturally inscribed, fatalistic beliefs of all hues and shades in different societies.

The strength of this acceptance is so extreme that these days it is quite normal to hear people refer to some of the deeply engrained practices within an organisation, in a business, or even in a community, having nothing to do with genes, as being "in their DNA." Nevertheless, this popular notion of DNA being the central and the only player in cellular and genetic information is quite flawed and scientists have known this for a long time even as new evidence continues to mount opposing the perception of DNA as the master molecule. It is also no longer a simplistic genes vs environment argument, nor do genes provide a map or blueprint that is merely set off one way or another or slightly modified by the environment; indeed "what is a gene?" is a hotly debated and unsettled question in science.

China's First 'Blue Book' on India Sees a Govt. in 'Serious Crisis'

The first ever 'blue book' on India released in China by a prominent official Beijing publisher has portrayed a government in "serious crisis," but expressed the belief that India would likely emerge as a stronger country by conquering its current obstacles.

Chinese think tanks release 'blue books' every year on a number of issues. While not representing the government's view, the books are put together by official think tanks and the projects are

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understood to be given tacit backing by the government.

The first ever blue book on India was released by the Social Sciences Academy Press, detailing political, economic, foreign policy and defence issues for the year 2011-12. The book runs into more than 300 pages, and was compiled by Yunnan University, which has one of China's biggest South Asia programmes.

According to a brief summary, the book sees India as weighed down by a number of crises — particularly corruption scandals — but also details India's rising military strength, which it sees as being partly directed at China. It ultimately expresses the optimistic view that India would emerge stronger from the current period of difficulty. "The Chinese saying which says 'many difficulties can make a country prosperous' reflects India's problems and hope," the book concludes.

The book, however, sees India today as a country beset with numerous challenges, saying the current Congress-led United Progressive Alliance government was facing its most serious crisis since it came to power in 2009.

It pointed to frequent corruption scandals, divisions within the UPA and public anger at the economic situation as leaving Prime Minister Manmohan Singh's government with a tarnished image amid declining public trust. It saw the year 2011-12, which the report covers, as among the worst since India's "remarkable achievements" after reforms in 1991. The book estimates that by 2030, India's population will exceed that of China's.

On the foreign policy front, the blue book notes that India has focused on boosting relations with its neighbours in South Asia, pushed forward peace with Pakistan and developed strategic relations with Bangladesh, Sri Lanka and Nepal — countries with which China has also recently deepened economic ties.

It sees the United States "pivot" to Asia and strengthening of alliances in the region — viewed by most analysts in China as being directed to "contain" Beijing — as accelerating India's "Look East" policy, observing that India's defence cooperation with the U.S., Japan, Vietnam and Australia has warmed.

⇒ WHITE BENGAL TIGER ENIGMA SOLVED

A change in a single amino acid (A477V) in one pigmentation-related gene (SLC45A2) causes some tigers to have white fur with dark or sepia brown stripes, scientists from Peking University, Beijing, have found. They studied 16 captive white tigers from three parents. The results were published on Thursday in the *Current Biology* journal.

The colour of the fur, stripes and eye of the tiger is determined independently by two types of melanin — pheomelanin and eumelanin. In the case of white tigers, only the pheomelanin that produces the red to yellow colour is affected. Eumelanin gives the black to brown colour and is unaffected, the reason why the eye and hair in the stripes are dark or sepia brown.

The scientists found that the point mutation in the amino acid partially blocks a particular channel, as a result of which the yellow pigment-forming process gets affected. Incidentally, mutations in the same pigmentation-related gene (SLC45A2) causes light skin colour in modern Europeans, as well. Mutations in the same gene causes skin lightening in some mouse, horse, and chicken, the scientists point out.

The point mutation has "evolved only once and its frequency is probably never high," they write. Though white tigers were found in the wild once, their decline was probably due to mindless killing by humans. The last known white tiger was killed in 1958, they note.

To maintain and increase the number of white tigers in zoos, humans often force them to inbreed. But inbreeding, as seen in the case of humans, causes many health problems. In the case of white tigers, the human-induced inbreeding has resulted in "premature death, stillbirth and deformities." Since the mutation affects only the pigmentation process, it probably has no role in causing deaths.

⇒ INDIA, THAILAND SIGN EXTRADITION TREATY

After two decades of hard and tortuous negotiations, India and Thailand have signed an Extradition Treaty, concluded a memorandum of understanding (MoU) to exchange intelligence related to money laundering and terrorism financing and ratified the Treaty on Transfer of Sentenced Persons,

which was concluded in February 2012. These, along with a slew of pacts, capped the visit of Prime Minister Manmohan Singh to Thailand on Thursday.

⇒ AN ANGLO-INDIAN INSURANCE POLICY

Through the waxing and waning of the Anglo-Indian community, demographically and economically, there has been one constant factor in their story, post-Independence: the constitutional provisions granting nomination to two members from among them to the Lok Sabha and one to the Vidhan Sabha in the States where they have a presence. These two provisions were expected to allay their insecurities following the end of British rule, and, hopefully, stem their exodus from India.

However, over the passage of six decades since the Constitution was adopted, the two provisions (Article 331 and Article 333) governing nomination have increasingly become devices for bolstering wafer-thin majorities in legislatures, besides smacking of partisanship. Worse, the application of these provisions has an unmistakable, undemocratic ring to it, in the absence of institutional mechanisms to secure the community's consent for the nominees. Therefore, isn't it time to revisit Article 331 and Article 333, which had been initially envisaged to operate for only 10 years?

Provisions

The rationale behind the nomination was linked to the minuscule population of Anglo-Indians, and the imminent rollback of the preferential treatment accorded to them under British rule. In the Constituent Assembly, Sardar Hukam Singh suggested that the President should nominate two members from any minority community — not just Anglo-Indian — which he felt had not been adequately represented in the Lok Sabha.

Ananthasayanam Ayyangar countered Singh, arguing that the other minorities, Muslims, Sikhs, Christians, were not as few as Anglo-Indians and would not go unrepresented in the Lok Sabha. He said their population was not even "five lakhs for the whole of India. You cannot point out to any constituency where they will be in a majority." The Anglo-Indians were a special case among all minorities because, Ayyangar felt, "they were once

part rulers of this country and therefore they should be shown some partiality for some time to come." Ultimately, Ayyangar's argument prevailed.

Though nomination for Anglo-Indians has been extended every 10 years, by amending Article 334 (b), the constitutional provisions providing special treatment to them in certain sectors were allowed to lapse. For instance, Article 336 provided for reservation for Anglo-Indians in railways, customs, postal and telegraph services on the same basis as it had existed before 1947 for the first two years of the Constitution coming into operation; but the quantum of posts was to be reduced every two years and phased out at the end of the tenth year. Similarly, following more or less the same formula, Article 337 providing special educational grants to the community, as it had existed before 1947, was to end in 1960.

Census

Yet, all these privileges did not slow the exodus of the community from the country. For one, the migration of Anglo-Indians, as several academic papers bear out, arose from the issue of identity: many of them perceived themselves to be culturally closer to the British than to Indians, and considered "England" as their home.

The Census data of 1941 pitches their population in undivided India at 1,40,422, a figure thrown up through a survey conducted inadequately because of war efforts consuming the colonial government's energies. It is generally agreed they were approximately five lakhs in 1947, and because of the unabated migration, their population today is said to be between one and 1 {+1}/{-2} lakhs.

In a reversal of the earlier policy, Census 2011 is now required to furnish the socio-economic and caste profile of India. Consequently, we should soon know their population figures. Should it hover around, say, one or even two lakhs, is there not a case, rooted in the logic of democracy, for reducing the number of nominated members in the Lok Sabha by at least one, if not annulling these provisions altogether at the Centre and in the States?

Not only is the efficacy of this privilege debatable, Anglo-Indians today are more integrated in society than they were in 1950.

⇒ INDO-JAPAN RELATION

Manmohan Singh's visit to Japan holds out the hope that the two countries have turned the corner of a somewhat underperforming relationship. An agreement towards a civilian nuclear deal still looks some distance away. But the decision by the Prime Minister and his Japanese counterpart Shinzo Abe to "accelerate" negotiations towards this, though below New Delhi's expectations for a definite timeline, shows Tokyo remains interested despite domestic public opposition to nuclear energy and its export, especially to a non-signatory of the nuclear Non-Proliferation Treaty. Japan's commercial motivations are quite obvious. Component vendors like Toshiba, Mitsubishi and Hitachi are keen to find new markets abroad after Japan's own decision to drastically cut its reliance on nuclear energy in the wake of the 2011 Fukushima disaster. Both sides have also agreed to set up a joint working group to discuss modalities for the sale to India of the US-2 amphibian aircraft, which is being used by the Japan Maritime Self-Defense Force, as its navy is called. This is the first time Japan is reconsidering its post-World War II self-imposed ban on the sale of defence equipment to another country, though the plan could well be to sell it to India as a civilian aircraft. The two Prime Ministers were appreciative of the expanding defence relations between the two countries. The Indian Navy and the JMSDF held their first bilateral exercise off the coast of Japan last year. These exercises are to become a regular feature. The strategic dialogue between the two countries includes a regular exchange between the defence ministers of both countries, a "two plus two" dialogue involving the foreign and defence secretaries of both countries, a dialogue specifically on maritime security, besides a U.S.-Japan-India trilateral dialogue. While both sides are keen to lift their relations to the next level, New Delhi needs to guard against allowing ties with Japan to get underpinned by the shared wariness of Beijing. There is nothing to be gained for India, Japan or China in a polarised Asia. Tokyo has been large-hearted in its infrastructure development assistance to India, which it has now promised to expand. But despite the two sides talking up their "natural" partnership and their synergies, India's trade with Japan is at a measly

\$17.5 billion, and the 2011 Comprehensive Economic Partnership Agreement has not yet delivered its promise of trade in goods and services. This aspect of the relationship — rather than the purely 'strategic' pivot that certain lobbies in both countries are promoting — needs much more attention than it is getting now.

⇒ THE CRUDE REALITY OF OIL PRICES

The bankers have finally got their revenge. Oil traders claim that influential bankers, furious that their sector has been squeezed by regulators since the 2008 crash, have persuaded Brussels that oil traders should no longer be able to operate without the same rigorous rules. According to the bankers, oil traders behave worse than money brokers. And so the Eurocrats raided the offices of BP, Shell and Platts, comparing their investigation into oil price-rigging with the one into the bankers' Libor scandal. By focusing on Platts, an unusual reporting agency whose methods to discover the price of oil often provoke accusations of dishonesty, the Eurocrats have won public sympathy and the gratitude of those banks who host massive oil—trading operations.

Over the past century, the repeated charge is that oil prices have been rigged by oil traders, refiners or producers. At its simplest, traders are alleged to either flood or squeeze markets to fix prices to grab a quick profit. Undoubtedly some traders have been dishonest, and U.S. regulators have charged a handful of traders for manipulation. But their alleged crimes were short-lived and simple to detect. The current suggestion that BP, Shell and Platts have been conspiring for 10 years to manipulate oil prices — possibly the Brent market in the North Sea — is mind-boggling.

Dynamics of Pricing

Setting the price of oil is fiendishly complicated. Unlike the price of gold or BP shares, oil's value is not fixed in one open stock market. Crude oil is not only traded on regulated markets in New York and London but also around the clock in thousands of opaque markets. Like wine and cheese, the quality and value of crude oil varies significantly, and this is reflected in its price, as are many other factors. The difference in price also depends on the distance between the

oilfields and refineries in three locations: Oklahoma, the North Sea and Dubai, as well as other factors such as whether the oil is for immediate delivery or in the future. Every day, tens of thousands of anonymous traders across the globe are secretly agreeing prices worth trillions of dollars. A market can only work if traders, including their dishonest brethren, know what prices their competitors have agreed. Since 1909, traders have increasingly relied on Platts, owned by McGraw-Hill, the U.S. publishers.

Platts reporters call hundreds of producers and traders every day to discover their purchase and selling prices. Unscrupulous traders lie to manipulate the market, but even the best manipulator can only fool the market for a couple of days yet often takes advantage of an incompetent Platts reporter. Some of the most aggressive traders suspected of speculation are global commodity trading giants who are beyond the Eurocrats' reach. And so the bankers are angry.

Speculation

In a world of squeezes and deception, bankers' oil-trading has shifted the balance. Over the last 20 years, Morgan Stanley's sophisticated trading has become colossal speculation. Markets have witnessed huge crashes following crazy speculation to manipulate the oil market. But while U.S. investigators have repeatedly accused honest speculators of causing phoney price increases, they have also failed to find convincing evidence of a conspiracy. After Morgan Stanley's traders suffered huge losses in 2008, Platts declared its price reporting was unacceptable. The bank protested that there was no evidence of wrongdoing but to its distress was excluded by Platts from the system for a period. Now bankers protest that oil traders and Platts should be regulated like them.

The Platts system is imperfect, but no alternative has been found. Whatever transgressions the Eurocrats might discover are inconsequential compared to the world's mammoth price-fixer, OPEC. Every day, the oil producers who claim to control about 80 per cent of the world's oil restrict their production to keep prices artificially high. This group is too powerful to challenge. No one in Washington or Brussels can order the Saudis or Venezuelans to

produce more oil or charge a fair price. Instead, Saudi officials in Dhahran unilaterally impose the highest price they can extract. Stymied by OPEC, the Eurocrats have gone for smaller fish. Like the U.S. regulators, they will at best emerge from the treacle with a minnow.

⇒ SCHEMES TO RESHAPE

Abewildering and endless variety of programmes with fancy names populate the annals of governance today. While the special focus that Centrally Sponsored Schemes (CSS) thus bring to sectors that need extra attention has often proved to be an advantage, poor design and implementation with little other than fancy nomenclature and grand announcements to prop them up, have often proved to be a disadvantage. The 'branding' exercise has not always served the cause. Some of the schemes have been plagued by overlaps, duplication and bureaucratic mismanagement and negligence that impinge on efficiencies and lead to wastage. A Group of Ministers has now approved the restructuring of CSSs, merging some 170 of them into 79, in order to ensure better implementation and monitoring. At the end of the 11th Plan, in March 2012, there were 173 CSSs and Additional Central Assistance (ACA) schemes. Hopefully, as the matter comes up before the Cabinet again, competing, even conflicting, interests among different ministries would not come in the way of making the final push on this key issue — although the pruning will still not meet the 2011 recommendations of the B.K. Chaturvedi Committee to bring the number down to 59.

While the share of CSSs in gross budgetary allocations has gone up significantly over the last three Plans, the number of such schemes has come down. Yet, CSSs tend to pre-empt resources available to States, given that fund packages often get channelled directly for the programmes, sometimes without the tailored flexibility that is needed to optimise utilisation. In some instances, funds are transferred to district-level bodies, bypassing State governments. Understandably, several States have complained about the rationale and implementation of CSSs. The system of flexi-funds that has now been proposed, under which State governments can use 20 per cent (10 per cent in case of flagship schemes)

of the budget allocated for CSSs, within the broader framework of given programmes, should address part of that problem. The GoM has favoured a system of transferring funds from the Centre to State consolidated funds, rather than directly to implementing agencies.

It has also approved the setting up of State-specific guidelines for each CSS. Hopefully, the new and improved package will prove to be a more effective, flexible and efficient instrument to translate Plan objectives into actions. Meanwhile, there is a case to tighten monitoring and evaluation mechanisms, with each CSS being reviewed at least once in two years, with an eye on better outcomes and impact.

⇒ CHINA APPROVES

ENVIRONMENT ASSESSMENT OF 'TALLEST DAM'

Chinese authorities have granted approval for an environmental assessment of a controversial 2 GW dam project — slated to be the country's tallest dam — despite concerns voiced by a number of environmental groups.

The Ministry of Environmental Protection this week said it had approved a year-long assessment of the Shuangjiangkou project on the Dadu river in the southwestern Sichuan province. Even as it gave the go-ahead, the Ministry acknowledged the project would "affect the spawning and movement of rare fish species, as well as the growth of endangered plants, including the Chinese yew, which is under first-class state protection". The Ministry reasoned that countermeasures would help mitigate the impact. It called for protecting fish habitats and constructing seed banks for rare plants but did not say how it would enforce those measures.

The Shuangjiangkou dam will have an installed capacity of 2 GW and will generate 7.93 billion kilowatt-hours of power annually, according to the official Xinhua news agency. The project will cost \$4 billion. At 314 metres, it will be China's tallest dam, surpassing the nearly 300-metre-tall Xiaowan dam on the Mekong river. The Shuangjiangkou dam will tower over the 180-metre-tall Three Gorges dam.

The green light for the dam follows recent approval granted to other controversial dam projects on the Brahmaputra, or Yarlung Tsangpo as it is

known in Tibet, and the Nu river in Yunnan. The projects were listed in a new energy plan for 2011-15 announced in January, which included three new dams on the Yarlung Tsangpo.

Disappointment

Environmental groups have expressed disappointment over the moves. Green groups were encouraged by the government stepping in to stop projects in 2009 and 2010 over environmental concerns. The new energy plan, however, has been seen as reflecting a shift in the government's stand, activists say.

The Shuangjiangkou dam, groups say, will not only adversely impact downstream flows but also submerge parts of at least six nature reserves.

"The chemical, thermal and physical changes that flowing water undergoes, when it is stilled, can seriously contaminate a reservoir or river downstream," warned Liu Shukun, a professor at China Water Resources and Hydropower Institute, in an interview with *China Daily*.

While the public has until May 17 to put forward its views on the assessment, groups say inputs from the public have carried little weight in past projects. Hydropower groups are said to have close ties with local governments.

"Any project that poses such huge potential risk should only be completed with public approval," Yang Yong, a geologist with the independent Hengduan Mountain Research Society, told *China Daily*.

"It's important to let the public know how construction decisions are made."

⇒ CLINICAL TRIAL DEMONSTRATES

EFFICACY OF ROTAVIRUS VACCINE

The Phase-III clinical trial of low cost Indian-made rotavirus vaccine Rotavac has demonstrated strong efficacy and excellent safety profile and if approved by the Drugs Controller General of India, it would be available at Rs. 54 per dose.

This vaccine, developed under a public-private partnership, will be the third to hit the Indian market, but will be more affordable than the two vaccines now available costing more than Rs. 1,000 per dose.

The clinical study has demonstrated for the

first time that Rotavac is efficacious in preventing severe rotavirus diarrhoea in low-resource settings in India, and developing countries in Asia and Africa. Strain diversity, too, has not apparently affected its efficacy.

Rotavirus is responsible for approximately 4,53,000 child deaths due to diarrhoea globally each year. It is particularly threatening in India where — according to a recent study — around 1,00,000 children die each year from severe diarrhoea and dehydration caused by rotavirus. India accounts for 22 per cent of the estimated global deaths from diarrhoea-causing rotavirus. Rotavac is an oral vaccine and is administered to infants in a three-dose course at the ages of 6, 10 and 14 weeks. It is given alongside routine immunisations in the Universal Immunisation Programme (UIP) vaccines recommended at these ages.

“Once sanitation and drinking water supply in the country improves, the efficacy of the vaccine is bound to go up. Rotavirus is also associated with gut infection and the vaccine is known to give ‘herd immunity.’ Even if 25 per cent infection is prevented, it will mean a substantial public health gain,” said M.K. Bhan, former Secretary, Department of Biotechnology.

“This is an important scientific breakthrough against rotavirus infections. Clinical results indicate that the vaccine, if licensed, could save the lives of thousands of children each year in India,” K. Vijay Raghavan, Secretary, Department of Biotechnology, said.

The randomised, double-blind, placebo-controlled phase-III clinical trial enrolled 6,799 infants in India (aged six to seven weeks at the time of enrolment) at three sites — the Centre for Health Research and Development, Society for Applied Sciences, in New Delhi; Shirdi Sai Baba Rural Hospital, KEM Hospital Research centre in Vadu; and Christian Medical College in Vellore.

Infants received Rotavac and the UIP vaccines, including the oral polio vaccine (OPV).

Result showed that infants receiving OPV at the same time as Rotavac generated comparable immune responses to all three polio serotypes as the infants receiving OPV without Rotavac, supporting the concurrent administration of OPV and Rotavac.

⇒ JUDICIAL APPOINTMENTS COMMISSION

The appointment of judges to the Constitutional Courts is presently done by the collegium of judges of the High Court and the Supreme Court. The controversies surrounding the proposed appointment of Justice P.D. Dinakaran, and the impeachment of Justice Soumitra Sen show that this system of appointment has surely failed. Recent political consensus also appears to be against the collegiate system of appointment of judges, and in favour of it being replaced by a Judicial Appointments Commission (JAC).

It would however be naive to believe that the mere setting up of a JAC, without anything more, can be the solution to the present problems plaguing the appointment of judges. The Ministry must identify transparent and well-defined criterion based on which the JAC would function and exercise its powers. It is also important to note that the setting up of a JAC cannot be done through legislation alone. The collegiate system of appointment of judges was instituted by the judgments of the Supreme Court in the three *Judges* cases; and to set up a JAC and in effect reverse the holding in that decision, it is imperative to “remove the foundation or the basis” on which the judgment was passed. Since the *Judges* cases have rendered the word “consultation” (with the judges) in Articles 124 and 217 of the Constitution to mean a virtual “concurrence,” it would be essential to pass a constitutional amendment to amend the text of those Articles, lest the validity of the JAC be open to challenge on this ground. The UPA government does not have the numbers to pass such an amendment by itself; and it would require a consensus of parties across the political spectrum to do so.

Pendency of Cases

The Indian judicial system is overworked, understaffed and bursting at the seams. Pendency of cases in the High Courts and the Supreme Court is at an all-time high. Many have argued that the solution to this is to increase the number of judges — we have approximately 11 judges per million persons, as opposed to the global average of around 50 judges per million. However, the judge-population ratio is,

strictly speaking, irrelevant to understand the issue of pendency. What is relevant is the judge-pendency ratio, the impact of which has sadly not been examined in policy debates. More importantly, an empirical study conducted in 2010 (Kannan) revealed that the problem with the working of the judicial system lies elsewhere. It concluded that (assuming no fresh cases are filed) it would take approximately nine months to clear the entire backlog of cases in Tamil Nadu.

Most States in India had somewhat similar figures, and only a few needed more than two to three years to clear their entire backlog. These numbers demonstrate that the problem of pendency is not insurmountable, and the answers to streamlining the working of the judicial system are not to be found in resolving pendency by increasing the number of judges. They lie elsewhere.

National Litigation Policy

The trouble with the working of the judiciary can be traced to the existing institutional structure. Most cases in the courts are fought by or against the state or its agencies, and serious efforts must be made to transform the government into an efficient and responsible litigant. A well-drafted National Litigation Policy was mooted under the aegis of Veerappa Moily in 2010, but remains largely unimplemented. Similarly, provisions for imposition of actual costs on litigants would reduce frivolous law suits, and cut down on unnecessary adjournments. The executive, the legislature and the judiciary need to work together to implement these institutional changes, and the lead must be taken by the Law Minister.

The law officers of the government, the Attorney General, the Solicitor General and the Additional Solicitor Generals, do not merely serve their clients, but owe an important duty to the court and perform critical constitutional functions. The Constitution in Article 76, in fact, enjoins the President to appoint "a person who is qualified to be appointed a Judge of the Supreme Court" to be the Attorney General. In the recent past, several law officers appointed under the UPA government have compromised the dignity of their office while the upright ones have preferred to quit.

⇒ NORTH POLE

DRIFTS EAST DUE TO CLIMATE CHANGE

Around 2005, accelerated melting of polar ice sheet and mountain glaciers, together with rising sea level, caused the North Pole to drift towards east, marking an "abrupt departure" from the direction recorded over the past century. Accelerated rates of ice melting in Greenland and Antarctica have been observed since 2005-2006 and thus coincide with the abrupt change in polar shift.

The melting ice has also increased the rate of drift from about two million seconds (MAS) per year during the period 1982-2005 to about nine MAS per year post 2005, a study published recently in the journal states.

The changes were recorded by satellite gravity measurements by the Gravity Recovery and Climate Experiment (GRACE) mission, jointly sponsored by U.S. and Germany.

GRACE provides monthly gravity field data that correlates with mass changes for the entire Earth, and from this, it is possible to extract the precise contributions from individual sources. This information helped the scientists in pinning down the cause of abrupt pole drift in 2005 to "variations in climate system".

Atmospheric and terrestrial water storage changes have made only a "minor" contribution to the shift in Pole direction and rate. The researchers from the University of Texas at Austin consider this study as a reaffirmation of the increased ice melting at poles and mountain glaciers in recent years. This is borne from the fact that mass movement in solid earth takes place over long time scales. Since earth monitoring using satellites has begun only during the last few years, there is no way of knowing the rate and amount of ice-sheet melting in the past. However, data on polar motion is available, thus making it possible to extrapolate the polar ice-sheet melting in the past.

⇒ ZEBRAFISH:

SPERM AHEAD OF EGG TO FORM ANY CELL TYPE

All multicellular organisms originate from the fusion of a male and a female gamete cell, for example, the sperm and the egg cell. This results in

the formation of a zygote which contains DNA from both gametes. The zygote is special because this single cell is capable of developing into an embryo and ultimately an entire organism, unlike an already-differentiated cell like a skin cell which can only develop into skin tissue. This property of the zygote is called 'totipotency'.

Whether the gametes' DNA is already prepared for totipotency at fertilisation or whether it needs to be reprogrammed to enable the zygote's totipotency, is a question crucial to developmental biology. Scientists from Huntsman Cancer Institute (HCI) at the University of Utah have some answers.

They analysed the DNA methylation patterns of sperm cells, egg cells, three stages of embryo cells before its genome is active, and one stage after it is active. When methyl groups attach to certain areas of DNA, gene activity in those areas gets "turned off". Studying the DNA methylation pattern of an undifferentiated cell (the embryo cell), and comparing it with the pattern of a differentiated cell (the egg cell and the sperm cell) can tell us which genes need to be activated to make a cell totipotent.

Zebrafish was chosen for this study as it is an ideal organism: it generates a large number of egg cells and there is a longer gap before the zygote is activated. Zygotic genome activation (ZGA) is the point of transition from maternal to embryonic control of development. Second, ZGA occurs at approximately the 2-cell stage in mice, and the 4- to 8-cell stage in humans, compared with the 1,000-cell stage (about 3 hours post-fertilisation) in zebrafish.

This gives scientists more time to examine the process of ZGA in zebrafish than in its mammalian counterparts. The results were unexpected — the sperm cell's methylation pattern matched that of the active embryo cell, while the egg cell needed to be reprogrammed before it reached this state. This means that at fertilisation, the DNA from the sperm is more "poised" for development than that of the egg cell.

⇒ **AGE LIMIT RELAXED FOR
FINANCIAL ASSISTANCE UNDER
JSY TO INSTITUTIONAL DELIVERIES**

The Ministry of Health and Family Welfare has relaxed eligibility parameters for the Janani Suraksha

Yojana (JSY), which provides financial assistance to mothers for institutional deliveries. Now, Below Poverty Line (BPL) women can access JSY benefits irrespective of their age and number of children.

All women from BPL category, Scheduled Castes and Scheduled Tribes in all States and Union Territories will be eligible for JSY benefits if they have given birth in a government or private accredited health facility. BPL women who prefer to deliver at home can also get JSY benefits.

Launched in 2005, the JSY is the government's main scheme to enable women — especially those from vulnerable sections — to access institutional delivery. This was done to reduce maternal and neonatal mortality. The highest maternal mortality is reported among girls aged 14-15; the majority of these were out of the purview of the JSY as they were unable to produce proof of age or verify the number of children they had. Till now, the scheme provided assistance for institutional delivery to all pregnant women who give birth in a government or private accredited health facility in Low Performing States (those with bad health indicators, such as Uttar Pradesh, Bihar, Chhattisgarh, Madhya Pradesh, Uttarakhand, Jharkhand and Assam). A woman gets Rs.1,400 for delivery in a government facility or accredited private facility and Accredited Social Health Activist (ASHA) gets Rs. 600 in rural areas. In the urban areas, the amounts paid are Rs.1,000 and Rs. 400 respectively. However, in High Performing States (those with good health indices, such as Kerala, Tamil Nadu and Karnataka), assistance for institutional delivery was available to women from BPL/SC/ST households, aged 19 or above and only up to two live births for delivery in a government or private accredited health facility. The financial entitlement was Rs. 700 to the mother and Rs. 600 for the ASHA in rural areas and Rs. 600 and Rs. 400 in urban settings.

Further, in all States/Union Territories, the scheme provided Rs. 500 to BPL women — aged 19 or above and who deliver up to two live births — who prefer to deliver at home. With the amendments, all women who deliver at home will be entitled to this amount, basically for nutrition. The government claims that as a result of the scheme, there has been an increase in institutional deliveries — from 47 per

cent in 2007-08 to 72.9 per cent in 2009 (Coverage Evaluation Survey) and, most recently, to approximately 79 per cent — as per Health Ministry data.

⇒ U.S. CLEARS SHALE GAS EXPORT TO INDIA

Opening up the prospects of export of shale gas to energy-starved India, the U.S. has granted conditional authorisation to export domestically-produced liquefied natural gas (LNG) to countries that do not have a free trade agreement (FTA) with it.

In a decision, which has major implications for India, the Department of Energy (DoE), on Friday, announced that it had conditionally authorised Freeport LNG Expansion, LP and FLNG Liquefaction, LLC (Freeport) to export domestically-produced LNG to non-FTA countries from the Freeport Terminal on Quintana Island in Texas.

Given that the companies from countries such as China, Japan and Britain have already an overwhelming stake in this Texas company, India is unlikely to benefit immediately from this grant of licence. But the decision paves the way for India, which does not have a free trade agreement with the U.S., to get its companies seek similar licences for import of the much-needed gas from the U.S. in large quantities from other terminals. The existing federal law generally requires approval of natural gas exports to countries that have an FTA with the U.S.

For countries that do not have an FTA with the U.S., the Natural Gas Act directs the Department of Energy to grant export authorisations unless the Department finds that the proposed exports “will not be consistent with the public interest.”

⇒ CASH TRANSFERS ARE BAD FOR FOOD SECURITY

India’s hard won gains in achieving food security are in danger of being undermined by a clause in the National Food Security Bill that encourages States to adopt cash transfers in lieu of food entitlements under the Public Distribution System (PDS). Supporting this view, a recent report by the Commission for Agricultural Costs and Prices (CACP) concluded that the provision of food subsidies in the form of cash would save the government crores of rupees. Additionally, cash

transfers will supposedly eliminate middlemen such as dealers and transporters, ensuring that the subsidy reaches intended beneficiaries.

Cash transfers are a solution only if we view the PDS in isolation, rather than as part of a larger food policy. India’s food policy begins with the procurement of rice and wheat and price support operations by the Food Corporation of India (FCI) and the CACP. Each State is entitled to purchase a certain amount of food grains from the FCI at subsidised prices for distribution through its Fair Price (Ration) Shops. It is this distribution end that constitutes the PDS, and what the cash transfers would replace. Besides not taking into account the devaluing effect of inflation or the role of intrahousehold dynamics when it comes to cash transfers, its supporters do not specify what would happen to the agricultural commodities that are procured by the FCI. As the policy exists today, the government holds millions of tons of rice and wheat, well above the buffer norms required by law. To reduce its stocks, the government has preferred open market operations (to bulk consumers) and export to distribution through the PDS.

Experiments with Decontrol

Using those actions as an indicator of the government’s policy orientation, cash transfers arguably are a gateway to greater deregulation of the food market. Relying on cash transfers alone would mean that the beneficiary households would have to turn to the market to meet all their food needs. More importantly, the stabilising effect that the PDS has on consumption and prices would be lost. Cash transfers thus are only a partial substitute to the PDS.

To understand the importance of a broad food policy, we only have to look at India’s brief experiments with decontrol. The government’s policy reaction to the Bengal famine of 1943, which led to the death of 1.5 million people, provides us with a primer of what not to do in a famine situation. At first, there was a complete laissez-faire policy towards food grain trade, which led to hoarding by traders, farmers and consumers. Subsequently, the provincial governments introduced a policy of procurement and distribution of food grains, which failed miserably as they did not have the requisite infrastructure to

implement the policy. For example, grains were rotting in Calcutta, the centre of distribution in the eastern region, as the government had not made arrangements to handle incoming stocks. To avoid what was called a "tragedy in unpreparedness," the government took steps towards setting up a comprehensive food administration, including procurement by the government, the building of buffer stocks and the introduction of rationing.

The next phase of free markets in food was under the Food Minister, Rafi Ahmed Kidwai, beginning 1952. Improved food grains production in 1953 and 1954 led to declining prices and a temporary break from chronic shortages. Government procurement of food grains was stopped and restrictions on the movement of grains were removed. Paradoxically, even as farmers faced deflationary conditions, there were shortages and price rise in various parts of the country. The instability in prices, combined with adverse weather in the autumn of 1955, had a dampening effect on production.

In 1957, the Ashok Mehta-led Food Grains Enquiry Committee concluded that an expanded money supply, growing industrialisation and urbanisation and increased investment led to enhanced purchasing power. On the other hand, hoarding by traders, producers and consumers as well as speculative activities in anticipation of public investment by the government led to a rise in prices. Additionally, it found that prices were allowed to fall too low in 1955 and that there was no coordinated policy of combating inflation and shortages that began in 1956.

Back to Controls

The government had to reintroduce controls and carry-out price support operations to curb the fall in prices. It opened an additional 10,000 ration shops between October 1956 and September 1957, and released its stocks to combat price rise. This episode underscored the need for the government to intervene in the market to influence prices and output. The Food Grains Enquiry Committee recommended the setting up of institutions like the FCI and the CACP for this purpose. The government's decision to promote cash transfers in the National Food Security Bill presented in the recently concluded session of Parliament ignores these lessons from India's past.

Since the 1950s, India has made major strides in agricultural production as evidenced by the large government-held stocks of wheat and rice. However, problems of inadequate nutrition, starvation and double digit food price inflation remain. Strengthening of the PDS, as seen in Chhattisgarh and Tamil Nadu, would serve the purpose of ensuring food security for the nation through stabilising prices, production and consumption. As seen in the past, government withdrawal from the food sector can lead to a decline in production and an increase in hoarding and speculative activity. Unlike the PDS, cash transfers cannot counter the resultant shortages and price rise. In a growing economy like India with constantly increasing demand, the government needs to intervene on both the demand and supply sides to ensure food security for all its citizens.

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Gist of

YOJANA

⇒ **DEMOCRATISATION OF INFORMATION**

Recognizing that we are increasingly a nation of a connected billion people, this Government is committed to democratising information and building a unique public information infrastructure in the country. This infrastructure will leverage 'ICT to revolutionise our current governance and service delivery paradigm. Networks such as the National Knowledge Network, which connects Universities and Research Institutions, and the Rural Broadband Network, which connects Panchayats, will emerge as the new highways for connecting ideas and disseminating knowledge. Initiatives such as Aadhaar and the National GIS will enhance policy planning to make it more efficient and effective, and numerous applications riding on this ICT infrastructure will unleash unforeseen innovation at all levels of the citizenry. As and when this new infrastructure becomes ubiquitous, connecting people and ideas in an ever faster manner, we will witness a generational change in our current processes towards openness, accessibility, transparency, accountability and decentralisation - essentially 'democratisation of information'. And this democratisation of information will challenge established structures of power built on the premise of information control to change towards a new paradigm of a more transparent and accountable society.

A central piece of this emerging dynamic is the role social media will play in the process of democratising the information regime. Citizens everywhere are already connecting, interacting, sharing and expressing themselves in the alternative space of social media. These platforms, which started

at the fringes, are now increasingly getting embedded in mainstream culture and inspiring actions and reactions in our physical world. The Arab Spring is just one of the examples of how this new media is shaping activities in the world of realpolitik.

In fact, social media is fast emerging as a powerful and unparalleled tool to share information, shape opinions, connect people across domains and cultures, bring participation, and above all to communicate as never before. Social media can become a very effective policy tool for Governments if they learn to leverage it in the best possible manner. Governments across the world need to communicate more effectively, engage citizens, garner feedback on policies and programmes in real time, and demonstrate a commitment to a more participative governance model. In all these areas social media platforms can offer the right interfaces and tools. Further, as internet penetration increases manifold and it becomes more localised, social media will enable more and more people to get connected.

At our office we have tried to capitalise on social media platforms for disseminating' our message and communicating to people in real time. We have held two press conferences on Twitter to engage communities, journalists and the public at large and answer questions on specific themes related to our work. At one of these conferences we got about 2000 Tweets in a matter of 45 minutes - we had participation from more than 150 locations, largely from India but also from Europe, Middle East, UK, South East Asia and other parts of the world. Periodically we post videos and information related to our work on several of our websites and on YouTube. After we hosted the Global Innovation Roundtable 2012, where heads of innovation policy

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from Governments across the world were invited, we held a virtual press conference on Twitter to share the discussions and outcomes of the Roundtable. We have also initiated a lecture series on the National Knowledge Network which connects all higher educational institutions in the country, where lectures from one physical location are beamed to universities across the country. Finally, we have developed in partnership with the US Government an Open Government Platform to place Government data and documents in the public domain. This is now operational with more than 400 data sets and can be accessed at www.data.gov.in.

Apart from our office, many other initiatives in the Government of India are committed to harnessing social media. An ever increasing number of Ministries / organisations are on social media platforms including the Ministry of External Affairs, the Planning Commission and the Prime Minister's Office. For instance, the Finance Minister conducted a Google Hangout to explain the Budget to the people of the country, a first of its kind at the national level. The Planning Commission has also taken some creative steps towards leveraging social media which was demonstrated in its efforts to communicate the 12th Plan via Social Media. The Deputy Chairman and Members of the Commission discussed the plan and answered questions from the public on a Google Hangout for the first time. The Planning Commission in collaboration with our office also organised a Hackathon on the Plan to receive feedback, visualisations, animations, etc. on the subject matter of the 12th Plan. This Hackathon also highlighted the power of this medium to crowd source creativity, talent and new solutions.

This is just the beginning. Social media is still at a very nascent stage and communities across the world are just beginning to understand the potential of this medium to impact discourse and communication. For instance, current methods of communication in Government could change to leverage Facebook, Twitter, Youtube, along with traditional methods such as press releases etc. Further, as traditional media becomes increasingly dictated by monetary decisions and establishment structures, social media will emerge as the more

untainted voice of the citizens and will truly be the people's platform, with the power to transform their transactions and interfaces with Governments.

⇒ INDIA AND THE

ASCENDENCY OF THE GLOBAL SOUTH

The Elevation of a Jesuit from Argentina to the highest rank of the tradition-bound Roman Catholic church - arguably one of the most conservative and orthodox institutions of the established world order - is the clearest sign for believers of that faith of the ascendancy of the global South. For followers of other faiths and non-believers, however, this dramatic shift was highlighted yet again by another more secular ritual: the release of the 2013 Human Development Report (HDR) by the United Nations Development Programme (UNDP).

Aptly titled *The Rise of the South: Human Progress in a Diverse World* the Report notes: "For the first time in 150 years, the combined output of the developing world's three leading economies - Brazil, China and India [BIC] - is about equal to the combined GDP of the longstanding industrial powers of the North - Canada, France, Germany, Italy, the United Kingdom and the United States [six of the original G-7]." The global South is generally understood to be countries that do not belong to the Organisation for Economic Cooperation and Development (OECD), with one or two notable exceptions, such as Chile.

The narrative of the rise of the global South is not new; it has often been foretold. Jim O'Neill of Goldman Sachs in a 2001 paper entitled "Building Better Global Economic BRICs" predicted the ascent of the primarily southern economic powerhouses of Brazil, India and China, with Russia being a curious inclusion. Similarly, the formal establishment of the G-20 in 1999-2000 by members of the western G-7 club acknowledged the fact that this exclusive club could no longer protect the international economy from systemic vulnerabilities without including the bigger emerging southern market economies, like India. This was recognition not only of the growth of the bigger economies of the global South but also the role that they play in sustaining the global economic growth. While the advent of both the G-20

and BRICS marked the ascendancy of the global South it did so only in terms of GDP and not human development.

In contrast, the HDR looks not only at GDP but also measures the human development index (HDI) of a country based on education, health, gender inequality and income parameters. In doing so the HDR puts human security on par with the traditional notions of state and economic security. In this context, the Report's findings are revealing: apart from matching the combined GDP of the G-6, the BIC countries have also dramatically improved their HDI scores. India's overall HDI score, for instance, rose from 0.41 in 1990 to 0.554 in the latest Report.

However, even more significantly, in addition to the BRICS, at least 40 other countries of the South made gains on their HDI scores between 1990 and 2012. These countries were as varied as Bangladesh, Benin, Columbia, El Salvador, Gambia, Laos, Uganda, Vietnam, as well as countries either recovering from or still in the throes of violent turmoil, such as Afghanistan, Egypt, Myanmar, Rwanda and Tunisia. In fact of the 132 countries with a complete data series only two - Lesotho and Zimbabwe - had lower HDI value in 2012 than in 1990.

In addition the Report also records the rapid rise of the middle class in the global South from 26% to 58% between 1990 and 2010. By 2020 it is estimated that of the 3.2 billion projected global middle class population as many as 1.7 billion (over 53%) will be located in Asia-Pacific region alone. Moreover, within this region, China and India will account for more than 75% (about 1.3 billion) of the middle class population, with related consequences of higher consumption.

In terms of income the worldwide proportion of people living in extreme poverty fell from 43.1% in 1990 to 22.4% in 2008, with the BIC countries making the most impressive strides in reducing the proportion of their "income poor" population. China has made the most striking reduction from 60.2% in 1990 to less than 13.1% in 2008 while Brazil's reduction was from the relatively higher base of 17.2% in 1990 to 6.1% in 2009. In contrast India is the laggard that marked a decline in its "income poor" population from 49.4% in 1990 to a mere 32.7% in

2010. In fact, India is a straggler amongst the BIC and even the BRICS countries. Its overall HDI ranking of 136 (out of a total of 186 countries) is not only the lowest among the BRICS but is 15 places behind its closest BRICS partner-South Africa, which ranks at 121. India also comes in last among the BRICS in all of the other HDI indicators, except two - women's participation in national parliament and maternal mortality ratio.

Its adult literacy rate of 62.8% is way behind even South Africa's 88.7% and only 38.7% of India's population is educated up to the secondary education - again, the lowest among BRICS countries. India also has the highest infant mortality rate; highest death rate of children under the age of five; and the highest number of underweight children among all the BRICS countries. India's gender equality ratio is worse than every country even in South Asia, except Afghanistan. What are the reasons behind India's relatively poor ranking in key HDI indicators?

To address this question, it is important to understand the factors that led countries to improve their HDI standing. These are revealed in the 2013 Report, which identifies several crucial elements.

First, countries that have improved their HDI standing did so on account of three principal drivers: "a proactive developmental stage, tapping of global markets and determined social policy and innovation".

Ideally a proactive developmental stage will lead to policies that are "based on long-term vision and leadership, shared norms and values, and rules and institutions that build trust and cohesion". In addition, policies for investing in human development and capabilities should not be regarded as "an appendage of the growth process but an integral part of it". For instance, there is a clear correlation between public expenditure on health and education and rapid economic growth. In reality, however, the development and implementation of policies is likely to be uncertain, especially in large and complex societies, like India.

Similarly while global markets and foreign direct investment (FDI) have played an important role in wealth generation that alone is not adequate

to enhance the HDI ranking of countries. This is particularly evident in the case of FDI into countries rich in natural resources but relatively poor in human resources: for instance, between 2003 and 2009 many resource-rich African countries which grew economically on account of FDI inflows still notched up some of the lowest non-income HDJ values.

On the other hand, successful integration with global markets requires investment in people, institutions and infrastructure. As the HDR notes: "Without investment in people, returns from global markets are likely to be limited". Thus, there is a direct co-relation between the need to enhance HDI standing to draw the maximum benefit from integrating with the world economy.

Moreover, countries that have deliberately pursued social policy and innovation, especially public investment in health and education, have sustained rapid growth. Coupled with this, "growth has frequently been much more effective at reducing poverty in countries with low-income inequality than countries with high-income inequality". Indeed, policies that promote social equality among different religious, ethnic and racial groups and inclusion of those on the economic fringe "can underpin long-term economic growth by supporting the emergence of a healthy, educated labour force".

This echoes almost exactly the *India Human Development Report 2011* which also argued "investment in health and education can enhance human functioning ... and further economic growth". Based on its HDI assessment of states the Indian HDR also stressed the need for promoting social and economic equality on the grounds that "poorer states are so because there are large proportions of the excluded social groups (who are generally poorer) living there; conversely, in the poorer states the different development programmes do not reach the targeted population" of economically and socially deprived sections.

Thus, there is a close co-relation between the need to build national consensus for long-term policies on the one hand to ensure the gradual but deliberate integration with the world economy and on the other to invest in domestic human development to take full advantage of the

opportunities provided by the external openness. Without this two-pronged approach neither economic growth nor human development can be assured. Such an approach calls for political leadership at the highest national level.

Finally, South-South cooperation, which for most-of the 20th century was a mere slogan, is emerging as a vital factor not only in the economic growth of poorer countries but also the human development of their populations. This cooperation is evident at several levels. At the ideational level the less developed countries can learn and benefit from the success of the emerging economies of the South; their experience is more relevant to the developing countries than the experience of the OECD countries. At the practical level, South-South cooperation in investment, finance, technology transfer, and trade were key new factors in facilitating the economic growth of the global South.

One indication of this is the rise in South-South trade from 8.1 % in 1980 to 26.7% of total world trade today. In addition nearly half of all remittances sent home by emigrants from the South come from workers living in other developing countries. Similarly growth in low-income countries would have been lower by as much as 1.1-percentage point between 2007 and 2010 had China and India registered a fall in growth rate similar to that of developed economies. Moreover, global South countries have increased their share of global FDI to 50% and, as an example, nearly half the financing for infrastructure projects in Sub-Saharan Africa over the past decade came from countries and regional funds of the South. Similarly, the BICs have emerged as the largest donors outside the OECD. Moreover, the development assistance from the South often, if not always, comes without conditionalities (unlike most OECD assistance) and is mostly used to build much-needed infrastructure.

⇒ EXPLOSION IN DIGITAL SPACE:

OPPORTUNITIES AND CHALLENGES FOR INDIA

There's a new nation on earth with no defined geography. It is spread across the globe and is less than ten years old. It apparently had one billion people in 2012, making it the third most populous

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country on the planet after China and India. It has been calculated that “it took the population of modern humans about 200,000 years to reach that number”. This nation exists only in cyberspace and it is called Facebook. Facebook’s

larger-than-life presence in digital media, which is itself defined as “the creative convergence of digital arts, science, technology and business for human expression, communication, social interaction and education”, is a phenomenon that is being emulated and imitated the world over. It is inspiring new forms of human interaction, a phenomenon described as social media networking.

India can seize a series of opportunities while harnessing the progressive aspects of the exponential growth of social media-although a substantial section of the country’s population is yet to benefit from access to the internet- even as this exponentially-growing phenomenon has a distinct downside, since it has been (and can be) misused and abused to spread rumour and discontentment. The flipside of the social media as an empowering and democratizing force is its potential to spread chaos, confusion and anarchy. Like other developing countries, India will have to not just bridge the overall digital divide and the urban-rural hiatus in the use of the internet but also find an appropriate balance between the positive and negative aspects of the social media, between their benefits and their challenges.

Social media has been defined as “a group of Internet-based applications that allow the creation and exchange of user-generated content.” “Furthermore, social media depends on mobile and web-based technologies to create highly interactive platforms through which individuals and communities share, co-create, discuss, and modify user-generated content. It introduces substantial and pervasive changes to communication between organizations, communities and individuals. “

To appreciate the significance of those statements above one needs to take a quick look at a certain set of reasonably well-authenticated statistics relating to internet usage and penetration that pertain to June 2012. If one compares these numbers with a similar set of figures pertaining to the

situation that prevailed twelve years earlier at the beginning of the new millennium, internet use globally has grown by over 560 per cent in this period. Still, the penetration of the internet in the total population of the world is just over 30 per cent; in other words, two out of three individuals on the planet still have not used the internet, leave alone benefit from it. In Asia, which currently accounts for over half the world’s population, internet growth has been in excess of 840 per cent over the last twelve years. Asia currently accounts for almost 45 per cent of internet users the world over and India contributed under 12 per cent of this number in the middle of 2012.

In the early 2000s, software developers enabled end-users to move from a static and rather passive viewing of pages on the world wide web to more interactive, user-generated content within what were online or virtual communities. This resulted in what was termed Web 2.0 but more importantly created the phenomenon we now call social media.

Social media includes the ability and the facility to discuss, create, cooperate on, share and modify information in text, image, audio and video forms among users of social networking websites such as Facebook, Twitter, Flickr, YouTube, LinkedIn, Pinterest, MySpace, Soundcloud and a host of other similar sites. While it may be true that social media has led to what is called the “democratization of the internet” and most significantly preserved the ideals of free speech and expression, it is equally true that it has also created a lurking monster which seems to be growing in strength. With the availability of the internet on the rapidly burgeoning number of mobile hand-held devices like smart phones and tablets, the sense of immediacy in virtual socialising has increased manifold. Not only has inappropriate content for impressionable and young minds become easily accessible, it has consequently allowed persons with reprehensible intentions to use the medium for various nefarious purposes. Cyber-bullying, cyber-stalking, rum our-mongering are only the tip of the tail of that menacing monster.

Let us consider what happened when ethnic clashes between the indigenous Bodo tribe and Bengali Muslim settlers broke out in the district of

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Kokrajhar in Assam on July 25, 2012. Mainstream media, after choosing to not fully report on the ground realities of the clashes, were subjected to pertinent questions and adverse criticism: on social media on their silence and/or inadequate coverage of the situation, offered various and perhaps curious reasons for this lack of reportage. While social media did step in with users reporting from the affected areas, and information about shelters, hospitals, relief facilities also being made available on many websites, the flip side was that vicious and unwarranted rumours too were transmitted via social media. These rumours, which began to circulate in early August via social networking sites as well as through mobile telephony and messaging, caused panic among India's north-eastern ethnic people who were located in southern and western India, mainly in Bangalore but also in Chennai, Mumbai and Pune. The Indian Railways had to cope with an unprecedented rush of these people wanting to go home as soon as possible as they had "heard" that Muslim fundamentalists would target them in retaliation for the clashes that had taken place in particular areas in Assam where Bodos live.

This negative aspect of the social media has to be placed in a wider context. There is one view that argues that the concept of the right to offend is increasingly being countered by the notion of the right to feel offended at everything. The question then arises as to whether freedom should come first and ethics second. Why should Article 19(1)(a) of the Constitution of India be restricted by Article 19(2)?

Article 19(2) of the Constitution of India lays down what are considered "reasonable restrictions" on the exercise of the provisions of Article 19(1)(a) which specifies that freedom of expression is a fundamental right of every Indian citizen. The problem essentially is one of defining who decides what is "reasonable" and what is not. If it is the courts of law that decide, one would not have too many reasons to complain. However, the definition of what is a "reasonable restriction" to the right to freedom of expression is decided by various sections of society (from the law enforcing authorities to fundamentalist groups) under different circumstances and often in an arbitrary manner, thereby causing

situations of chaos and confusion. One can provide the following examples to illustrate this contention:

Shaheen Dhada and Rinu Srinivasan, two young women from Palghar near Mumbai were arrested in January after Shaheen posted a comment on Facebook wondering why there should be a bandh-like situation in Mumbai following the death of Shiv Sena leader Bal Thackeray and Rinu had "liked" the comment. The case, was later dropped and the two police personnel who had arrested the women were transferred.

Cartoonist Aseem Trivedi was arrested on sedition charges in September 2012. His cartoons offended people in power.

Social media has also tarred reputations of public figures, infringed laws of privacy, copyright and other human rights through user-generated content. Yet it has in no way deterred the growth of this phenomenon which threatens to replace and outdo traditional media whether in India or the rest of the world. Despite criticism that social media has adversely affected personal communication whereby people no longer seem to find the time to talk to each other in the old-fashioned, face-to-face way, the digital space keeps throwing up newer and more engaging means of social networking.

One of the main drivers of social networking and the growth of social media is mobile telephony. A C Nielsen's *The Social Media Report 2012* assesses that "More people are using smartphones and tablets to access social media With more connectivity, consumers have more freedom to use social media wherever and whenever they want."

According to the Internet and Mobile Association of India (IAMAI) report, the number of social media users in urban India reached 62 million by December 2012. Nearly three out of four (74 per cent) of all active internet users in urban India use the social media.

Some of the other key takeaways from this report are:

Active social media user base in India: 32.5 million (82 per cent of the active mobile Internet base)

- A higher proportion (82 per cent) of mobile active Internet users access social media, as compared to that accessed by the total

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- active Internet base (72 per cent)
- Considering the top 35 cities in India, 77 per cent or 18.2 million of the active mobile internet users (out of a total of 23.6 million) access social media, second only after e-mail (83 per cent)
- Average frequency of social networking access using mobile internet: seven days a week
- Facebook is the leading website accessed by 97 per cent of all social media users in India
- The growth in the number of social networking users can be attributed to the rising internet penetration in India, through increasing affordability of smartphones and consequent mobile internet use.

While evaluating social media usage by different devices, it is interesting to note that there are about 39.7 million active mobile internet users in urban India or almost half the total active internet base. It should be noted that these mobile internet users belong to the overall general active internet user base of 80.2 million individuals.

In fact, social networking is considered the main internet activity done on a mobile phone which is mentioned by exactly one-third (33 per cent) of all respondents, just a bit lower (32 per cent) mentioned for email.

Indians spend an average of approximately 30 minutes every day on social media. Of these numbers, the maximum users are young men (84 per cent) and college-going students (82 per cent).

It is interesting to interpolate this data with the country's 2011 census statistics. India has more than 50 per cent of its population below the age of 25 and more than 65 per cent below the age of 35. It is expected that, in 2020, the average age of an Indian will be 29 years. The census indicated 74 per cent literacy among the entire population with the male literacy rate at 82 per cent. With cheaper mobile devices becoming more easily available, it can be safely assumed that internet usage — and consequently social media networking - will show quantum leaps in the next few years in India.

The IAMAI report *Social Media in India*

2012 states: "Social networking through mobile phones is an ever increasing phenomenon observed today. With mobile penetrations reaching very high levels, and an increasing number of individuals owning feature-rich phones or even smartphones that allow Internet access, social networking is rapidly penetrating the India active internet user base. Affordable mobile internet plans additionally serve rising usage levels."

While all this sounds very promising, it is not yet clear how far social media can possibly influence current public opinion on a mass scale the way television and even print media has and still does. Gautam Benegal, artist and freethinker, says in a recent post in Facebook: "Netizens -- as opposed to ci tizens — will only become a significant vote bank that will be taken seriously by our leaders if computers and internet enter every home, and voting is possible online. Until then netizens will only be howling away."

Research in India shows a gap much along the lines of the rural-urban divide - those who have access to the internet and those who don't, perhaps more appropriately called the netizen-citizen divide. The earlier mentioned fracas in Bangalore and the impulsive and impromptu gathering of thousands at India Gate in Delhi last December protesting against the gang-rape of a young woman are but exceptions. (At the same time, not all Indians are oblivious to the manner in which social media has been used in popular movements, for instance, in Cairo's Tahrir Square and in Shahbag in Dhaka.) At present, more than a third (34 per cent) of the social media networking users in India are based in the top eight metro cities, even as less than a quarter (24 per cent) are from small towns with populations less than 200,000 each while another 11 per cent resides in even smaller towns. According to the IAMAI, 72 per cent or 58 million people who are active internet users are in urban India. It is telling that the first internet in India report (I-Cube) of 2006 did not cover any rural area while the 2012 report covers only the "top 35 cities".

However, without internet access, social media or networking would not have a leg to stand on were it not for the amazing growth of mobile telephony in

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Gist of Yojana

the country. By June 2012 there were more than 900 million subscriber identity modules (SIMs) in India, up from a mere 10 million in 2000. *Forbes* magazine's Elizabeth Woyke wrote in June 2011 that "India will pass China to become the world's largest mobile market in terms of subscriptions."

Budde.com, which claims to be the largest telecommunications research site on the internet, has stated: "A number of factors have been responsible for the amazing growth in India's telecom sector; apart from the obvious booming economy and the rapid expansion in the country's middle class, the growth drivers include low tariffs, low handset prices and most notably a highly competitive market created by the government and the regulator". It also mentions that the mobile market in India was likely to expand at an annual rate of between 10 per cent and 15 per cent over 2012-2013" and that digital subscriber line (DSL) fixed-line broadband services were slowly losing ground to non-DSL platforms, most notably wireless broadband platforms. "The impact of mobile broadband was finally starting to filter through the market and in the medium term this was expected to lift broadband penetration significantly".

DO YOU KNOW?

What is Bitcoin?

Bitcoin is a kind of virtual token which is being used by some people as a kind of currency. Currently there are about 11 million Bitcoins in existence. The Bitcoins are represented by a unique online registration number. The process is called 'mining' in which a computer solves a mathematical problem with a 64 digit solution. With each solution the computer's owner is rewarded with 25 Bitcoins. About 3600 Bitcoins are created every day through the programming done by computers. Bitcoins can be received only by the persons who have Bitcoin address. The Bitcoin address is generated by a string of 27-34 letters and numbers which acts as a kind of virtual post box to send and receive the Bitcoins.

The original Bitcoin software was developed by one Satoshi Nakamoto. It started as an obscure

project in 2009. Since it is believed to have value for exchange, it is also seen as some kind of currency. However, it is a volatile and rather chaotic currency because of the lack of liquidity and a central monetary authority. Its demand and supply balance is uncontrolled. Bitcoins are vulnerable to manipulation and speculation in the absence of any large exchanges where buyers and sellers can find each other. However, some web sites act as Bitcoin exchanges. Due to the anonymity of the creators of Bitcoin, it is also used in a number of illegal transactions like drugs and smuggling.

What is trolling?

Trolling is posting of inflammatory or objectionable material on the internet. Trolling involves sowing hatred, racism or creating any other anti-social feelings. Trolls like to promote fighting. Their objective is to provoke others. They make others feel insulted and angry. It is an anti-social activity as the persons indulging in such activities violate the etiquettes, courtesy and consideration for the feeling of others. Trolling on Internet and posting of irresponsible and abusive material shows that a person indulging in such an activity has no sense of social responsibility. Such behaviour can include posting jokes or comments that may incite violent behaviour online or offline. Trolls often hijack debates on online forums and try to impose their views on those who dissent by coercion or by using abusive language. Trolls generally express extreme opinions that tend to incite people and generate abusive online discussion.

⇒ SOCIAL CAPITAL

CREATION THROUGH SOCIAL MEDIA

Social media means different things to different people. It can be used for hobby or as a serious and effective business tool. Behind every organizational success story in this media is a lot of patient planning and a sharp focus on getting things right - putting all the right elements in the right way in the right place at the right time. Like any other technology or facility, social media technology or facility too becomes good or bad depending on how it is used. In this article we forecast the evolutionary path likely

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up to the year 2020 for the ICT -ambience as well as the social media shaped by it and show how the enhanced or new features of this media can be well utilized to create social capital in the process of socio-economic development of the country.

Evolution of ICT-Ambience for Social Media

Formal technology forecast exercises carried out by the author in the past four years had predicted the IT-ambience supporting the social media, among others, up to 2020 in terms of Converged Mobile Handset (CMH), Bandwidth Enablers, Fourth Generation Long term Evolution (4G-LTE), Nanotechnology, web 3.0, Mobile Intelligent Agents (MIA), Cloud Computing and Reusable Component Software. These are briefly outlined below.

Converged Mobile Handset

By 2020 there will not be a Personal Computer (PC) hardware industry as we know today. The evolution of smartphone and tablet is poised for a Convergence into a single 'Converged Mobile Handset', which will incorporate in it full mobile phone functions as well as high end PC compute functions. Asterisk type creative PBX will result in an open source telephony platform which will be highly customizable with a wide compliance with standards and include service features of voice-mail, hosted conferencing, call queuing and music on hold. This will be scaleable from a few to a few hundred phone users.

The compute power of a high end PC will be actuated by callable apps depending on the problem environment on hand. All the seven more important intrinsic features required for a ubiquitous social media will be available: processing power, quality and power of graphics, broadband multimedia, full internet access, content handling and organizing capability, real time multimedia transaction ability, portability and affordability.

Eventually every citizen will own a CMH if we target for the use of ICT for evolution of a nation-wide utilitarian social media. Bandwidth Enablers While promoting a nation wide social media, one of the technological hurdles encountered will be the availability of bandwidth. First and foremost,

economy of bandwidth utilization requires a phased but sure transition from analog to digital, eventually digitalizing every conceivable application touched by the network. The second imperative will be the utilization of the bandwidth with least wastage. The third is the broad-basing of the spectrum outside the essential defense spectrum. The fourth and more difficult one to enforce is the prioritization of applications.

Many approaches are evolving along different technologies for addressing these problems. We will, in the next few years, have a mature technology in the Ultra Wide Band (UWB) with EM waveforms of instantaneous fractional energy bandwidth using radiating pulses that are very short in time and transmitted using an 'impulse radio'. In the context of a large social media, an efficient 'Medium Access Control (MAC)' can be introduced to allow multiple users to share a common resource. Another attractive technology is the optical wireless communication which does not need spectrum allocation.

Fourth Generation Long Term Evolution

The 4G-LTE can work on 1.2 Mhz to 20 Mhz as well as GSM frequencies with carrier frequencies in the range 20-160 Mhz. It is based on Orthogonal Frequency Division Multiplex (OFDM) modulation, which is highly resistant to multi path interference. A new antenna technology called MiMo increases the throughput several times. The 4G-LTE utilizes the allotted spectrum without waste.

4G-LTE enables the users to take the centre stage by fulfilling most of their needs at low cost. Using this, an adaptive, universally accessible, and easily configurable social media network can be built which can cope with unprecedented complexities through self-organized local controls. Though the network elements may vary considerably in type and characteristics, we can host highly interdependent and integrated applications. Despite the variety of network technologies and services using them, seamless mobile communication can be made by the user, for reaching personal services anywhere anytime over all access networks and devices. The user can be guaranteed adequate security and privacy of communication and transaction. With the availability of such facilities, the user can build

context and situation awareness, personalization and semantic services into their applications along with a proactive service provisioning, which are essential for a nationwide social media.

Impact of Nanotechnology

If nanotech development accelerates at the current level, it will have substantial impact on ICT, many of them conducive to the social media. Current capital investment in nanotech is over \$2 Billion, but R&D investment is ten times this. The world wide nanotech product industry exceeds \$ 30 billion. Indian nanotech export is now about \$ 100 million with over 50 companies actively involved in it.

Nanotech operates on the scale of molecules and molecular clusters and so will reduce the size and power consumption of ICT systems substantially. In ICT, its impact will be more on memory and storage devices, displays, central processing unit parts and sensors. Wireless devices and Wireless Communication systems are expected to experience its profound impact by increasing the speed and memory several times and decrease energy consumption. Both CMH and Wireless Systems will experience a positive impact. Though toxicity concerns are there, solutions are in sight.

Web 3.0 and Beyond

Some of the major limbs of Web 2.0 are: social book marking, social networking, content aggregation, wikis, mash ups and cloud computing.

Here, we had a new media paradigm-Social Networking and a new technology paradigm Micro blogging. Social networking is a social structure made of individual and/or organizations, which are connected by one or more specific types of social interdependencies such as friendship, membership, likes, dislikes, common interests, beliefs, knowledge and the like. It increases the level of interactions between like-oriented people. Micro blogging is a multimedia blogging that enables one to send brief text updates or micro media and publish them for viewing by anyone if public, or by a restricted group of one's choice if private.

In Web 3.0, the CMH, the email and the TV could all produce feedback that can be conveniently incorporated on any blogging platform, thereby

giving a seamless integration that can give access to blogging for the masses in the society as a necessity and not only as a hobby. Live blogging will become common place and bring the world of conferences and gatherings wherever you are and whenever it is convenient to you, with just a CMH in your hand. This will make the conductors of such meetings & conferences to bend their back to attract their virtual crowd.

Web 3.0 expands the web 2.0 features while it introduces new features like the semantic web in which the meaning, i.e. semantics, of information and services on the web is defined, making it possible for the web to understand and respond to the request of people and automatic gadgets to use the web content. With semantic features of the 4G-LTE, the 4G & Web 3.0 evolutions will take place synchronously.

With CMH becoming a universal object of possession by everyone, carried with them at all times, several new creative services will become possible. For example, the services of mobile devices, Geographical Positioning System (GPS) and web-based data can be combined in a convenient manner like the Location Based Services (LBS). LBS can identify the location of a person or object like a friend, associate or a nearest facility like ATM, including the ready display of a properly oriented local map.

Access to real-time data including real-time events of your interest happening will become prevalent on Web 3.0, which can become a valuable asset in social networking. Real-time search is also possible in which the data being searched is updated almost instantly or very frequently, including soft search like opinions of a selected group or popularity indexes apart from hard searches which are based on hard established facts.

If more relevant individual experiences are crucial in the social media, more personalized information is called for, thereby impinging, sometimes, on the identity and privacy of individuals, especially when such data can be linked and correlated through a Universal Identity (UID) system like Aadhar. Web 3.0 has technological solutions to obviate the need for 'throwing the baby along with

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the bath water'. For example, open ID is a Web 3.0 type concept similar to Aadhar which provides a single digital identity for users that can be used all over the Web. Over 50,000 Web sites, including Google, Yahoo, Microsoft and Face book permit users to sign in using open ID. The present levels of security that apply to online banking innovation including 'Online Paperless Money Transfer' is getting incorporated into Web 3.0 to give the required secure, convenient, seamless web experience.

Web 3.0 will move well beyond simple keyword searches by increasingly making use of semantic technologies to give a smarter search environment suiting the volume and complexity of the social databases. The earlier success with Search Monkey of Yahoo, Rich Snippets of Google, Bing Semantic Engine of Microsoft, among others, have encouraged the evolution of more powerful search engines on Web 3.0.

The World Wide Web Consortium (W3C) pioneered the 'Linked Data Project' to link together Web-based resources, that were not linked previously or were inaccessible as part of a Open Data Movement, exemplified by Wikipedia. The potential importance of this and similar projects to sociological analysis and research hardly needs emphasis. This is one of the tools in the initial efforts linking several hundreds of data sources on the social, economic and demographic descriptors of the cities, towns and villages of India. This will assist researchers working on the creation of social capital through policy frameworks and inclusive development initiatives. The pioneering projects of W3C are supporting our efforts by shaping Web 3.0 with the objectives of : Web for everyone, Web content accessibility as openly as possible, providing web security as much as an individual desires, enabling a web on everything, providing an expanding coverage of mobility, providing interactive expanding coverage on the semantic paradigm over the web. This will metamorphose websites into web services which is sine qua non of the feasibility of our goal.

Web 3.0 is already there but evolving the features outlined above among others and steadfastly galloping towards 2020.

Mobile Intelligent Agents

The volume and complexity of information content in society is staggering because we are dealing with individuals and groups of individuals with enormous diversity with highly time-dependent changes. To cope with this, web 3.0 provides what is called 'Intelligent Agents', which are software programs that operate unattended, usually on the internet. They are called 'bots' which make copious use of artificial intelligence (AI) and mimic human behaviour, but with a speed of several orders of magnitude higher. They can learn, make decisions and interact with other intelligent agents autonomously. They can employ 'data mining' techniques intelligently for searching and discovering basic facts and relationships from a large mass of data.

MIA proffers a new paradigm to internet itself. In general, MIA are programs that can migrate from host to host in a network autonomously time-wise and location-wise. A mobile code provides a single general framework in which distributed, information-oriented applications can be implemented effectively and conveniently affording the provider the flexibility to provide their users with more useful applications and features. Availability of a mature, flexible and useful enough MIA is slated only near about 2020.

Evolving Features of the Social Media

The social media ecosystem comprises of interactions , activities, transactions, and behaviors among a group of individuals with certain common identities and interests who can be together called a 'Community'. They share online opinions, information and knowledge utilizing conversational media like brief texts, pictures and audio and video clips. In as much as the social media and web 2.0 were closely related, though not synonymous, Web 3.0 evolution described above already characterizes the social media tools, services and applications that are evolving - with the traditional categories of engagement : Communication, collaboration, Education and Entertainment. The social media categories enabled by these categories of engagement on Web 2.0 that we are already familiar with, viz., social networking, Web publishing,

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microblogging, live casting, virtual reality constructs, Mobility, Interpersonal Transaction, Sharing and Creation of Still Pictures and Audio-Video Clips, Content Aggregation, Content Search, Really Simple Syndication (RSS) of Content and Gaming, are not only made more versatile, user-friendly, ubiquitous and powerful for creative applications and services in Web 3.0, more social media categories are getting added, each with their own characteristics, strategies and tools.

Mobility combined with compute power in the CMH is enabling all these categories in the social media ecosystem to be accessed via the CMH, spawning more powerful and versatile tools than Jott, SMS.ac, air-G, Brightkite, Call Wave and the like which we presently use.

Not only the traditional web publishing of texts like e-mail, web pages, blogs and wikis, but also texts, audio and video in combination can be done using the CMH. There are apps for professional editing and formatting in numerous fonts including mathematical symbols. Several people in a community can collaboratively publish a common theme to professional standards. For example, you can go to the sophistication of collaboratively creating a documentary movie using only the CMH and Web 3.0

Micro blogging, a cross between blogging and text messaging, which expresses your thoughts short and purposeful, is an economy of communication that Web 3.0 will continue to encourage but with greater facility through semantic features and AI-supported 'help' to make it short while being more purposeful. Reactions from a number of followers will be reverse-tweeted automatically as gists again by AI & semantic supported tools & can be automatically broadcast to all responders almost instantly creating an environment for a sophisticated Delphi-type approach. This can be a very effective decision-making tool to the limits of transparency. With Web casting, which broad casts information online, you can create live content on CMH and distribute or stream over internet or Broadband Community networks more dynamically on Web 3.0 than ever before, even in 3D or Virtual Reality form.

Syndication with a single click can send your

content to your followers soon after publication with vastly superior media aggregators and social bookmarks supporting you. With semantic and AI-based search, engines, we will have the means to cope with the Information and knowledge explosion. It is with this that the complexity and diversity of the society, so characteristic in our country, can be addressed. The Web 3.0 based social Media is an appropriate and adequate tool for the creation of social capital and hence social wealth through development which respects inclusion, individual capability maximization, optimum utilization of scare resources, appropriate and timely decision making and bottom-up planning.

Instrument for the Creation of Social Capital

These social media features can give new applications and instrumentalities which can create social capital in a variety of ways. To understand this, we redefine social capital in a delimited manner suiting the context of the social media.

The definition of social capital in general can be nebulous. We can narrow the context to the optimum use of the Web 3.0 based social media with an illustrative subset of applications: inclusion, capability maximization and bottom-up planning in a socially complex & diverse environment. In this context we can narrowly, but with more clarity, define social capital as a function of negentropy connoting the magnitude of disorder to order transition with 'order' denoting sustainable shared knowledge & norms of reciprocity, trust and positive values in a network of relationships between individuals and/or communities which shape the quality and quantity of interactions. Here, we consider social capital as a function of only the human capital consisting, among others, of knowledge, skills and attributes creating personal, social and economic wellbeing as well as the Network capital qualifying interactions which increase community wellbeing. From the development vantage, we consider the components as communitarian, Institutional, Network and also Synergy integrating the previous two. For our delimited applications we can consider social capital as bridging the social and economic perspectives so as to give a better direction for development.

The levels of social capital that can be considered are: Individual Informal Social Groups, Formal organizations, Communities and National.

Within the further delimited context of social media, we use, people and content to find each other through efficient searches afforded by Web 3.0 and make the best use of its tools for the management of content.

Social media on Web 3.0 as an enabler of inclusive education and training for information, knowledge and skill' acquisition will also give a new meaning to e-learning and life-long learning, the essential paradigms of the knowledge age. Semantic Web based e-learning will drive distributed computing, collaborative intelligent filtering and 3D (and 4D with time added) visualization and interaction based on CMH amenable to multi-touch screen technology. Self-organization and personalization features will be emphasized. Mash-up and cloud-computing integrated into Web 3.0 will make e-learning more independent of centralized institutional websites. This will make any-time any-place virtual class room and virtual teacher based e-learning a reality with smart solutions to web surfing, content management, and learning management. On top of all these the cost of education and national human resource development will plummet down.

Combined with cloud computing and Reusable component software technologies, the above Web 3.0 based e-learning tools can also lead to the assessment of intrinsic capabilities of all citizens, design a personalized capability enrichment programme and deliver it on the CMH. In general this can be used for a widespread Human Resource Mobilization scheme to empower all citizens inclusively.

Conclusion

In a country as diverse and complex as India is, a properly restructured and prioritized social media can act as a catalyst for the creation of the social capital in step with the creation of the economic capital, synergetically reinforcing each other. While acknowledging that the concept & definition of the social capital can be nebulous & daunting a well delimited contextual definition is possible, as

illustrated here with reference to the social media. The by and large predictable developments in ICT to the end of the decade are likely to transform the social media into a social network capable of handling India's diversity and complexity to the extent we can intelligently mobilize it through technological innovation and development which are germane to our social problems and applying these to grass root necessities with proper a priori analysis of ground realities.

Social media can decrease the social capital through entropic applications or can increase it through negentropic applications. Controlling the media can not give sustainable gains in the long run. But, putting into the stream of social media far more applications which increase the social capital than those that decrease it, however, can.

⇒ SOCIAL MEDIA AND POLITICAL COMMUNICATION IN INDIA

Social media has emerged as a vital tool of communication and has created new ways of mobilizing public opinion and encouraging participation in political and civic activities - ranging from joining online petition and social groups, posting short messages on Twitter, expressing supports through blogs and uploading videos on YouTube. The recent WikiLeaks disclosure online of US foreign policy clearly demonstrates the disruption caused by social media, which is now forcing the mainstream news media to turn to political blogs and citizen-users for materials. Such disruption has enabled citizens to discuss and share political information with friends and networked citizens, and critically monitor the actions of governments and corporate interests. This has also posed a profound challenge to the state about how to regulate social media and face user-generated challenges. At the same time, the uneven level of access of different social groups to new media, a phenomenon known as digital divide, has raised concern about the limitations of its democratic potential.

Can social media be used for an effective political communication in India where access to Internet is still limited? To what extent political parties and candidates as well as oppositional politics are

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Gist of Yojana

using social media for political campaign? Is it possible to reach to the non-internet users through social media? Before answering these questions it is important to look at some of the statistics about the internet penetration and social media uses in India. A report by the Internet and Mobile Association of India shows that as of June 2012, there were 137 million claimed Internet users: 99 million in urban cities and 38 million in rural villages. Of these 137 million Internet users, 111 million (80 million in urban cities and 31 million in rural villages) are active Internet users, i.e., they use the Internet at least once a month. In terms of percentage, only about 11.4 % of India's population uses internet, which might not be considered significant.

Similarly, in their recent report entitled "Social Media in India - 2012" estimates the number of social Media users in Urban India at 62 million as of December 2012. The report also reveals that the internet users are spreading fast in areas beyond the top eight Indian metros as one third of the social media users are residents of smaller towns with population of under 500,000, while a quarter of them are residents of towns with a population of less than 200,000. However, it is estimated that majority of the social media users use it for entertainment than for political activities, although we do not have data on the behaviour of internet users. The small percentage of the internet users and the users activities on social media, have led many political analysts to discount the capacity of the social media in having any significant impact on political communication. However, one needs to look at the recent uses of social media for political communication before ignoring its credibility.

In the recent assembly election in Gujarat, the chief minister Narendra Modi effectively used the social media to connect with online citizens. Besides being active on Twitter and Facebook, Modi also went for a live chat on Google plus with netizens. By going online for live chat, he became the first Indian politician to do so. Through his social media campaign, he was able to capture the first time voter, the youth, who certainly are more attuned to digital culture. At the same time, the middle classes are also quite active on social media.

Similarly, it is well known that Anna Hazare, in his agitation over the issue of the Jan Lokpal Bill, effectively used the social media to mobilize the youth and the middle classes. The effective use of social media not only brought the issue into cyber space and made it more global, but also garnered huge support for the anti-corruption campaign. The general perception that people use the social media largely for entertainment does not hold true in this case. At the same time, using social media for entertainment doesn't stop one to use it for political activities. Politics has certainly entered social networking sites, which has opened up new avenues for conducting politics.

Newspapers and news channels are now operating under the fear of losing their credibility to the social media. It is now difficult for traditional news media to hide a story from the public because of the fear that such stories might get published in a blog or get circulated on social networks. This pressure of the social media has certainly democratized the existing public sphere and enhanced the accountability of public officials. The recent exposure in India of many scandals has become possible because of the social media. Once the issue was exposed on the social media, public pressure started building on traditional media to take up the issue. The exposure of the 2G scam is one such case where the social media played a leading role.

Is there emergence of new ways of conducting politics with the coming of social media? In a recent study conducted by the IRIS Knowledge Foundation and the Internet and Mobile Association of India, claimed that results in over 150 parliamentary constituencies in the next general election could be decided by 'Facebook users, making them the newest vote-bank with the power to shape Indian politics.' One might as well question the validity of the findings as majority of the people in India use social media for entertainment. But one needs to understand that political participation is not static. Some people regularly follow political events, whereas others become interested only during a crisis or an important political event, such as an election or social movement. Among Internet

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users, substantial numbers may not be interested in the politics of the country or eager to participate in politics through the internet, but they are drawn into politics because a major personality is involved or during a major crisis. The Anna Hazare's movement reflects that the online public, who used social networking sites for entertainment and to stay in touch with friends, learned to use these sites to engage with politics. Such a development is new in India, but has been ongoing in developed countries. Social media also played an important role in the Arab Spring.

⇒ SOCIAL MEDIA:

RECONSTRUCTING THE FOURTH PILLAR

Recent technological innovations put the tools of production of media content in the hands of common man. It allows anybody with access to the Net to reach across to millions. It gives voice to erstwhile voiceless. Access to these tools empowers the powerless.

For the traditional large corporate media houses, however, it has been very disempowering. Grandmothers start chitchatting with their grandchildren on the other part of the world, disregarding their favourite serial- because that is the best time to interact with people on the other part of the world. Young householders living in rented flats are attending to their virtual farms and decorating their virtual houses, fulfilling their instincts and dreams. Young children making up animation stories using applications in iPad ... Attracting eyeballs to any mass entertainment has never been more difficult.

From the traditional mass media point of view, the new media is seen as merely another platform for delivery. But the new media is much more than that. It is a platform for interactions, conversations, searching, creating and sharing. Sharing is a two way process but media delivery is a one way street. The traditional business models for media are not yet really ready for this transformation.

Challenges to Traditional Media

The netizens today can now read a large number of newspapers, listen to a very large number of radio stations and see TV shows galore - without touching paper or a transistor radio or buying a TV.

The choice of media content is now in the keyboards of the media consumers connected to the net - irrespective of geographic/linguistic boundaries. The large variety of choices fragments the mass base of a media channel even more. Worse, in any case, than what happened to TV medium in the 90s with the satellite television boom.

Here is a situation where the readers wanted to be read, the listeners want to be heard, the viewers want to be seen. This is unprecedented. Letters to the editor or feedback of listeners and viewers including "request shows" that announce the names and cities of the requesters in the name of "interactivity" had limits of allocated space or time. The new media removed those barriers. And suddenly, the traditional mass media was losing out on viewers, listeners and readers.

So the mainstream media tried to overcome the adversity by proactively co-opting the new content to face the threat. UGC - not University Grants Commission, but User Generated Content - became a buzz word in the media Industries during the last decade. Al Jazeera and BBC vied with each other to showcase videos from video sharing sites. But the growing number of netizens would rather see the videos shared by their friends in Facebook. Or see channels and shows of their choice, at their convenience rather than be bound to couches at broadcast timings. The new subscriptions to cable is falling in many developed markets. And old subscribers are cutting cables.

Response to Challenges

Radio did not wipe out print media. Radio and print media survived the satellite television revolution by re-adjusting the media consumption habits. But just as the growth of consumers stagnated and reversed before the older mass media evolved to meet the challenges of the new media in the past, the future too will retain the old platforms for distribution of media.

However, what did not happen earlier, is the entry of a large number of consumers who turned into producers with the new technological tools for social discourse. Bloggers, podcasters and netcasters became the new age entrepreneurs. They did not need even a garage, as in the entrepreneurs that

developed the IT tools, but just a desktop and a keen vision of the content that compels consumption. The mainstream media responded.

Flogging citizen journalists for the lack of code of ethics or training was but an initial knee-jerk reaction. It had to be dropped because the argument applied to mainstream media professionals too. Fact checking is not practiced quite often by mainstream media: too much of a bother and it comes in the way of breaking news ...

So journalists and broadcasters were given their own space for blogging, twittering, ... it became a part of the job description. But then, the media professions were already quite volatile with a propensity to job hopping. And they took the readership, listenership and viewership along with them, when they left. Some could even strike out on their own and earn advertising revenues.

The underbelly of the mammoth media houses is being exposed: advertising industry is redistributing their pennies. The smaller portion of advertising pie hurts more than the fragmentation of the mass audiences.

Changing Power Structures

The transition of the media landscape from the state owned, state controlled media to the development of an independent, though commercial profit oriented media, had transformed many societies. The pluralism of voices contributed to the development of a democracy that responded to at least the voices of the rich and the powerful.

By changing the very structure of the fourth pillar of democracy, social media redefines and enriches democratic discourse. But then, simultaneously it blurs national borders. Social media is forging relationships that transcends kinship,

creed and country. Nationalism, the foundation on which a strong democracy can be built is no more stable or dependable as focal points for social development. Is a new kind of democracy evolving? Is it really possible to separate voting, having a voice and opportunities to participate in socio-economic development, previously integral to the concept of democracy?

Amplification of information and its diffusion in space through the printed media and the diffusion

of information through waves in time, as happens in broadcast media, are quite different from the packet switching and amplification in a network. Early morning rituals of reading newspapers - the same news that most of your neighbours read, news selected by a staff or a stringer, subedited, edited, laid out and printed, distributed by a publisher. The old system of being entertained by the same serial (Buniyad or Ramayan) as everybody else, at the same time. These phenomena may not entirely disappear. But today more people are consuming a wide diversity of media content. Because there is a diversity of content being produced. Not because of the will to control, nor the will to get rich, but to fulfil the need to interact, communicate, share ... And these activities are creating communities, new niches in social environment.

The flow of information in space and time in a network cannot be understood by either diffusion or wave models. The mathematical understanding of networks, physics of networks and technological frameworks on which the Internet works presently, would of course, be subsumed by a new world order of fractal structures. At least that is what theoretically we must expect.

The flow of viral videos and continuous flow of "forwards" create a new brand of leaders and followers of the information society. "Status" in this society depends on information and communication rather than money - yet it wields power. The more "connected" the nodes, the less the freedom, restricted by peer interactions. Less the degrees of freedom, less the degrees of separation.

From the sword to pen to camera and keyboard, the shift in social perceptions of what is mighty and great is but a natural transformation. From the kings' scribe to paid journalist to the narrator of one's life, work and society: the sources for tomorrow's historians is being generated at a very rapid pace in magnetic and optic media inscribed 0s 1s, in digital space.

Enriching the Narratives

The threads of conversations, photographs, shared jokes, information, weave a pattern of interactions that are quite human. That cannot be coded in 0s and 1s. Food, sex, social dominance and

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identity as well as other human concerns - health, education, ... - would obviously emerge as the mainstay of the narratives. Talking at cross purposes and hate speech also would be as common in the virtual world as it is in the real world. Cyber attacks and malware are testimony that it is we who create the virtual world. You will find scamsters and thieves equally on highways as much as on the information highway.

Social media permits multiple identities - tribal, feudal, regional, linguistic, national, religious, ... It satisfies the material impulses/instincts to be satisfied by proxy, in the virtual world. The very nature of the network allows hierarchical and horizontal connections with others. Six degrees of separation" will perhaps soon be overcome by less than six clicks. Anthropologists argue that the rise and fall of civilizations of the past were caused by climatic changes. This climatic change in media is unifying human civilization by creating a digital memory networked across the earth. In social ecology new niches are possible, and a larger variety of sub-cultures are evolving. The dependence of cultural diversity on geographies has been overcome by the tools of social media.

Just like the transportation networks disrupted the feudal and even family structures, the Internet is also a disruptive technology. Unlike the network of roads, electric lines, telephone lines, the Internet is a network of networks. Control or regulation by the state is limited to blocking of sites. Mirrors of sites with alternative URLs circumvent the attempts at even that. It would take all Governments of the world to come together to create any reasonable regulation. In other words, a world government.

Imagine - in all its diversities, world will be one. And I am not the only dreamer.

⇒ SOCIAL MEDIA IN

EDUCATION— HELP OR HINDRANCE?

In the era of Mahabharata, the supreme teacher Dronacharya refused to take Eklavya, a tribal prince, under his tutelage because he was not of royal lineage. So Eklavya made a statue of Dronacharya and practiced archery seeking inspiration from the clay statue.

Imagine Eklavya Today

A student as committed and passionate as Eklavya could easily find a guru on a MOOC (massive open online course), or on an open educational resource like Academic Earth. org. Finding a virtual guru would be just the first step in the student's learning journey. Whole-hearted participation and commitment, even in a free online course has the potential to open many new doors as Amol Bhave, a 17-year-old student from Jabalpur discovered. On 14th March 2013 Amol got the news that he had been accepted to MIT after scoring 97 per cent on MIT's MOOC (www.edx.org) on circuits and electronics.

Acquisition of knowledge and deepening understanding in a discipline is no longer confined to traditional formal institutions of education. Today, passionate participation in online communities can lead to mastery and also build a reputation that has the potential to open unimaginable possibilities. Advent of 'ICT-based social media' has significantly accelerated innovation in learning and education.

Imagine an alien, who first visited planet earth in early 11th century and went to see the first university in Bologna. If this alien had come back to an institution of higher education in the 19th century what change would it have found? Not much!

Hardly anything changed in the context of formal education in 900 years. Not only the constituent elements - a teacher, some learners, a classroom, learning content, examinations and some form of certification persisted, even the way education was imparted did not undergo much change and remained teacher-led and didactic. It is only since late 20th century, with Internet becoming easily accessible and cost-effective and mobile telephony becoming ubiquitous, that delivery of learning experiences is undergoing innovation.

High bandwidth and pervasiveness of devices that can connect to the Internet and display content in multiple formats has led to the proliferation of 'social media', which has in turn facilitated easy creation and prodigious sharing of enriched and enhanced learning experiences. A learner facilitator can today personalize a learning experience to a large extent, make it suitable to learners with different

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types of intelligences (Howard Gardner's multiple intelligences theory), different styles of learning (David Kolb's experiential learning theory) and share it across time and space.

Social media also provides an effective platform for developing the power of reasoning and expression. Conversations, discussions and heated debates done on discussion forums, or as 'comments' posted under a nugget of learning content (say comments under a YouTube video or a Slide Share presentation) lead to better understanding. Multimedia nature of social media allows expression in varied ways. Learners can present their understanding of a topic of study as a presentation, video, animation, interactive story, cartoon, simulation, or a game. For example, MIT's Scratch (www.scratch.mit.edu) is a free and easy to use tool for young learners to express themselves in multimedia narratives and simple interactive games. Scratch also has a social dimension. It has millions of users and projects. Learners can share what they have designed and also interact with other learners who may further build on their creation, duly acknowledging the source. Scratch also has a community for teachers to share how they are using Scratch in their classroom - www.scratched.media.mit.edu

Even social media based games have the potential for positive influence, provided they don't

become an addiction. In their book, "*A New Culture of Learning*" authors John Seely Brown and Douglas Thomas explore the future of learning. They make the point that playing an online, multiplayer game like *World of Warcraft* leads to profound experiential learning and the young players learn many life skills like fair play, teamwork, communication and improvisation. Furthermore, if you become a 'guild master' the game becomes a complete course on leadership! Thus, overall we can say that social media is more helpful than detrimental in fulfilling the basic objectives of education. For example, in US some online teacher communities now also facilitate teachers to raise small donations for their classroom projects. On such websites teachers put requests for solutions to problems they are facing, or raise small amounts of money, or seek donations in kind, or find volunteers. In conclusion, the benefits of social media in education far outweigh the drawbacks and hence there is a need to integrate social media into the educational mix. Of course, social media cannot be considered a panacea for education. There is no algorithm for learning and we need to be conscious of the downsides of deploying social media in education. But the conversation, collaboration, coherence, global reach, scalability and low-cost dimensions that social media offer can be a boon for meaningful, effective and engaging education for all provided they are used prudently.

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KURUKSHETRA

⇒ GRAMA SABHA—A MILESTONE FOR SUSTAINABLE DEVELOPMENT IN RURAL INDIA

The 73rd Amendment to the Indian Constitution (1992) is a milestone in the evolution of Panchayats in India which carved out the third tier of the Indian Political System. While the Panchayats have been the backbone of Indian villages to achieve economic development and social justice in rural areas.

Grama Sabha which is an entity of constitution of India is legitimized statutory body to do multi-faced work at the village level.

The main objective of introducing Grama Sabha is to have decentralized planning and evaluation with peoples participation at the grass root level. The concept of eradication of discrimination and facilitation of peoples participation from all walks of social life in the management of affairs of their locality were the foundation for the emergence of comprehensive society called Grama Sabha. Transparency and intimacy becomes part and parcel of their institution.

The realization that people's participation alone can bring sustainable development through good governance at the base level. Hence, it becomes inevitable that collective wisdom of Grama Sabha guides the Panchayati Raj Institutions in their planning and execution of developmental functions, social auditing as an integral part of Grama Sabha that ensures transparency in administration and accountability of Panchayati Raj Institutions. In Tamil Nadu Grama Sabha is described as "A body consisting of persons registered in the electoral rolls relating to a village comprised with in the area of Panchayat at the village level.

Grama Sabha Act in Different States

The significance of Grama Sabha was recognized first by Maharashtra government as early as in 1959. The Bombay village Panchayat Act of 1959 provided for a minimum of two meetings of the Grama Sabha to be held in a year. It is obligatory on the part of Panchayat to place before Grama Sabha annual statement of the accounts and report of the administration of the proceeding year the development and progress of works for the ratification of Grama Sabha. The significant role that Grama Sabha could play in Maharashtra can be understood from the fact that Maharashtra land reforms review committee recognized it even in the vital matters like complementation of tenancy acts. It is a paradoxical truth that in several neighbouring states of Maharashtra. The Grama Sabha is emerging as vibrant body of decentralized administration.

In fact the Karnataka act No.20 of 1958 passed by the erstwhile Janata government introduced the body called Grama Sabha an important competent of decentralized administration without mentioning about the specific functions of Grama Sabha. However, Dlwakar Committee (1963) had brought to light the difficulty caused by Grama Sabha as it does not have any constitutional rights to control the functioning of Panchayats at the grass root level.

The Karnataka Act reveals that Grama Sabha was expected to prepare and promote more development schemes for the rural development. But in reality there is no evidence to show that the Grama Sabha had performed the function. There is no substantial evidence to show that Grama Sabha had mobilized voluntary labour and contribution in kind and cash for Community Welfare Schemes.

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Grama Sabha in Tamil Nadu

Under section 3 of Tamil Nadu Panchayats Act 1994. Grama Sabha is envisaged for every village Panchayat consisting of persons registered in the roll released to the Panchayat. In Tamil Nadu Grama Sabha is an instrument through which public directly enjoy the power and feel the pulse of administration. Collective wisdom of Grama Sabha guides the Panchayati Raj Institutions in their planning and execution of developmental functions. Apart from this social auditing is an integral part of Grama Sabha in Tamil Nadu, which ensures transparency in administration and accountability to all in the village development.

Functions of Grama Sabha

Grama Sabha is the base foundation of the grass root level democratic institution and constitutional body would perform following 12 functions.

1. To examine annual statements of accounts, audit report, audit note and to seek clarification from the Panchayat.
2. To discuss report on the administration of the preceding year.
3. To review programme for the year, any new programme and review all kinds of works undertaken by the Gram Panchayat.
4. To consider proposals for fresh taxation or for enhancement of existing taxation.
5. To approve the selection of schemes, beneficiaries location, identification and implementation of various development programmes.
6. To mobilize voluntary labour and contribution of kind and cash.
7. To undertake programmes for adult education and family welfare within the village.
8. To promote unity and harmony among all the sections of the rural community.
9. To seek clarifications from the Mukhia and members of the Grama Panchayat about schemes, income and expenditure.
10. To consider the budget prepared by the Gram Panchayat and future development programmes and plans.
11. To maintain a complete register for all development works undertaken by Gram Panchayat or any other department.
12. To approve village plan of action.

However, here is no unanimity among the states in implementing the function devolved. Most of the states are not serious in implementing the functions to achieve sustainable economic development in the villages.

Grama Sabha Meetings - A Myth

One of the most important recommendations made by the 73rd Constitution Amendment that the Grama Panchayat should invariably conduct Grama Sabha meetings regularly and elicit the opinion of the voters about the priority of development works and in turn implement them to achieve sustainable development.

It is unfortunate that a majority of state governments could not show any seriousness and have failed to conduct Grama Sabha meetings which is mandatory. Unless the people of the village participate and ventilate their opinion in a democratic way Panchayati Raj Institutions cannot be strengthened.

The operational functions reveal that there is a diversity in the operationalisation of the concept of Grama Sabha in different states. Table-II indicates that in states like Andhra Pradesh, Bihar, Haryana, Uttar Pradesh and West Bengal only two meetings held annually. But in states like Arunachal Pradesh, Assam, Chandigarh, Goa, Kerala, Orissa and Tamil Nadu the functions of Grama Sabha is much better with four to six meetings held in a year. It is a paradoxical truth that Madhya Pradesh government has paved the way for the better governance at the grass root level by conducting 16 meetings held annually.

Grama Sabha Committees

Constituting Grama Sabha committees to supervise the operational aspects of Gram Panchayat as one of the vital concepts of decentralized administration. The observation reveals that most of the state governments are not serious towards the formation of Grama Sabha committees. Few states like Bihar, Goa, Himachal Pradesh, Manipur, Rajasthan

and Tripura have formulated vigilance committees to ensure transparency at the grass root democracy.

Though Grama Sabha is empowered to participate in decision making process of the Panchayat meetings, none of the state government formulated Grama Sabha with development committees at the village level. In order to ensure sustainable development of each individual citizen in the village. Hence, it is necessary to formulate following 18 committees for the total transformation of the Panchayat administration in rural India.

Need for Effective Peoples Participation

The goal of inclusive growth as envisaged by the government cannot be achieved without the effective participation of local people and the Panchayati Raj Institutions and these institutions should be considered as an integral part of the governance of the country. In this context several suggestions are made by the experts and voluntary organizations towards effective peoples participation.

1. Grama Panchayat should be made responsible to conduct Grama Sabha meetings twice in a year under the direct supervision of Mandai Development officials and the Revenue officials.
2. The exact date of conducting Grama Sabha can be left to the discretion of the village Panchayat and its members.
3. Beneficiaries of various schemes should be identified and approved only in the Grama Sabha meetings. All the benefits of various schemes should be distributed in the Grama Sabha only, so that benefits would go to right persons only.
4. Information regarding all government activities in connection with the village Panchayat should take place through Grama Sabha. This would create interest among the people to participate in the meetings.
5. A film show explaining the public policies and programmes under taken by the government in the field of Agriculture, Rural Health, Education Minimum Needs Programme, Right to Information, Drinking Water to all the local public, Public

Distribution System would attract the people towards Grama Sabha meetings.

6. A collective participation of the villagers along with Grama Panchayat ward members would go a long way in solving the developmental issues in the village in turn this would help in achieving integrated development in the village Panchayat.
7. Print and electronic Media should play an important role in providing adequate information about the growing importance of Grama Sabha and create social awareness among the people.
8. The salient features of Grama Sabha and the various activities to be constituted during Grama Sabha meetings and agenda has to be informed to the villagers well in advance.
9. Ward members/public representatives must disseminate the information about the Gram Panchayat function to the local people in their respective wards and they should motivate them to participate in the Grama Sabha.
10. Ward wise Grama Sabha would enable every voter to participate in the deliberations. The village Mukhia and ward member should apprise the ward people about the government programmes sanctioned to the village.

⇒ EMPOWERING GRAM SABHA THROUGH SOCIAL AUDIT

Gram Sabha is the fulcrum of the entire Panchayati Raj System in India as it enables each and every voter of village to participate in decision making at local level. Panchayat is supposed to convene a meeting of all adults of the village (Gram Sabha) and to read out all the financial statements and audit reports of the preceding year and the proposed work programmes for the current year. In contract nothing worthwhile happen in this direction due to lack of awareness among villagers and indifferent attitudes of village heads and other officials. It

has also been observed that in most of the cases villagers even do not know about their rights

and responsibilities which they possess being a member of the Gram Sabha. Even most of the members of Gram Sabha are not able to distinguish between Panchayat and Gram Sabha. For the knowledge of the villagers it is mentioned that Gram Sabha is the Corporate Body and Panchayat is the Executive Body in the Panchayati Raj System.

It has been also noted from time to time that citizens' participation in the Gram Sabha is not satisfactory and wherever they have participated the outcomes are impressive because it creates pressure on the functioning of Panchayats for the betterment of the village. The fact also can't be denied that these institutions operate in a complex social environment where the issues of caste, class, gender and religion can be seen openly. In actual practice the Gram Sabha has not raised to the expectation of the law makers too and even the spirit of the Constitution of India. The socioeconomic and political realities of India with illiteracy, prevailing caste and gender biases, the rigid caste hierarchy and the powerful patriarchal norms are also not conducive to legislations bringing desired changes. So there is urgent need to discuss the measures to strengthen and empower the Gram Sabha.

Social Audit

Social Audit is one such strong measure through which this target can be achieved. Social Audit is a process in which details of the resources, both financial and non-financial, is used by public agencies for development initiatives and is shared with the people often through public platforms. Social Audits also allow people to enforce accountability and transparency and thus providing the ultimate users an opportunity to scrutinize all the development initiatives taken by the Panchayats. Social Audits are mandatory as per the 73rd Constitutional Amendment in 1993, through which the village communities are empowered to conduct social audit of all the development work in their respective villages and the concerned authorities are duly bound to facilitate them. Social Audits are expected to contribute to the process of empowerment of the beneficiaries and generate demand of the effective delivery of programmes. Special Gram Sabha may be arranged to conduct Social Audits of all the previous

works in addition to ongoing development works as an item of discussion in meetings. But it has been noted that there are various factors affecting the Social Audit like;

- Lack of awareness among Gram Sabha members and their rights
- Lack of education at village level
- Dirty politics and infighting at Gram Panchayat level
- Lack of interest in people about the village activities due to their livelihood reasons
- Lack of information and awareness about various Government schemes
- Over dependency by villagers on panchayat members

Benefits of Social Audit

Awareness must be created among the Gram Sabha members that Social Audit is desirable for bringing transparency, quality and proper implementation of all the developmental activities being carried out at village level. The benefits may be cited as under:

- It will bring transparency and accountability in the functioning of panchayat system
- It will improve the quality of work and service delivery at all levels
- It will help improve people's participation at Gram Sabha level
- It will create awareness and knowledge among the Gram Sabha members about the development works being carried out at village level
- It will force the Panchayat to keep proper records and accounts of the spending made against the grants received from the government and other sources.
- Through Social Audit all the stake holders will be able to gain control over the implementation of development works undertaken by Gram Panchayat.

Other Ways for Empowering Gram Sabha

Creating Awareness: Awareness need to be created at village level about the rights and responsibilities of the Gram Sabha members which they are empowered through Constitutional

Amendments but not making proper use of those. They must be educated and motivated to use their Constitutional rights.

Education: It has been noted that in rural areas the level of education is very low which need to be strengthened through transformations in education policies especially keeping rural areas in focus.

Right to Information: Right to Information Act 2005 passed by the Government has proved to be very successful weapon in bringing transparency and accountability in the functioning of the public bodies but it is not being utilized to its fullest at the village level because of low level of awareness about this Act among the rural people. If the Gram Pradhan is indifferent to the village people and functioning as per his own requirements and not ready to give any details of the expenditure made in the development process than RTI Act can help them to know about all the details of the work done. But what is required to be done is to spread awareness, knowledge, benefits and the process of using this act among the rural people.

Regular Meetings of the Gram Sabha: It has been observed in most of the rural areas that the Gram Sabha or Ward Sabha meetings does not take place regularly because of the lack of knowledge among the villagers or indifferent attitude of the Panchayat members. It is advised that these meetings should be held regularly at least quarterly and the minutes of meetings should be sent to BDPO (Block Development and Panchayat Officer) duly signed by some of the senior Gram Sabha members. It is also to be making sure that these meetings take place in a cordial atmosphere and fruitful manner.

Supervision by Senior Villagers: The supervision of the development works being carried out at all the village level should be done either by senior Gram Sabha members or any specific individual deputed/designated by the government itself.

Training of Panchayat Members: It has also been observed that in most of the villages the Panchayat members are either un-educated or under educated and are not able to function in effective way as desired. In addition to personal greed, internal politics and infighting at village level play an important part in selecting and electing the Panchayat

members. So what is needed is that elected members should be trained and educated either at district or block level about their roles and responsibilities towards their Gram Sabha and should be motivated to raise themselves above the internal politics being practiced at village level.

Increasing Participation of People: Participation of the people should be increase in planning, budgeting and auditing of all the development work to be carried out at village level, and this will create a sense of responsibility for both Panchayat as well as Gram Sabha. In the context of Panchayati Raj institutions, strengthening people's participation in the Gram Sabha is 'a critical prerequisite for making Panchayats accountable to the people.

Better Coordination among Gram Sabha Members: Due to internal fighting and bad politics as village level it is being observed that there is low level of coordination among the Gram Sabha members and the Panchayat make better use of that for their greed and selfish works. So villagers should be educated and motivated to practice better coordination among themselves for the development of their village through Panchayat activities.

Capacity Building of Villagers: Because of the socio-cultural reasons and the mindset of being ruled and inability to ask questions in addition to the feeling among the villagers that Gram Sabha meetings are dominated by a few people and Sarpanch play an important role in low representation of the people in Gram Sabha. So the capacity building of the villagers needs to be done through education, awareness, training, increased participation in development works and many more so that they are motivated to attend these meetings and can raise themselves to ask questions from the Panchayat in those meetings. This can also be done by regular visits and attending Gram Sabha meetings by BDPOs too.

Displaying Information of Notice Board: Gram Sabha should demand from the Panchayat to display all the information, about the works being carried out or planned in near future, on Panchayat notice board time to time so that the members who could not attend the Gram Sabha meetings due to one or another reason can have access to all those information.

Women Empowerment: Government might have taken various steps for the empowerment of the women and in many rural villages some of the panchayat seats are being reserved for the women. But in actual practice it has been noticed that the elected women representatives only become a signatory authority and all the work is being done by their husband or male members of the family. In most of the cases women representatives even do not aware about the activities and the work being taken in the village. This is not the empowerment but the harassment with the women, they should be allowed to conduct Gram Sabha meetings (so that more and more female members are motivated to attend) and carry out other development work especially related to women affairs which male generally used to avoid, then only it will be real empowerment to the women.

Role of Media: Media is considered to be the fourth pillar of the democracy. But in the present scenario media may not be focusing on the issues related to rural areas to the desired standards. Media should also take responsibility to reach to the rural areas and spread the awareness through their designed programmes focusing on the issues of the rural concerns especially Gram Sabhas.

⇒ DIMENSIONS OF CHILD LABOUR

In developing countries child labour, in one form or other, is a serious problem. Many children are working in the worst forms of labour like bondage, semi-slavery, prostitution, civil wars and so on. According to International Labour Organisation publication 'Child Labour and Targeting' (1996), the number of working children in the age group of 5-14 years in all developing countries was 120 million but ILO later estimated in 2000 that there were about 180 million child labourers in the world and if secondary activities are included the number might reach to 250 million.

Again the number of child labourers is highest in South Asia and therein India has the highest number of about 20 million (as per estimate of the Planning Commission of India in 2000). However, if we add the number of marginal child labourers to the number of main child workers, it would be around 25 million. Though poverty is the cause of the child labour, it is not the only cause. For instance, food

insecurity, malnutrition, adult illiteracy, big size of the family, natural calamities, under-employment in agriculture, lack of awareness, bad habits of elders, etc are also the causes of child labour, especially in developing countries like India. Usually the prevalence of child labour is high in those regions where the problems of poverty, hunger, illiteracy, malnutrition and low adult wages are prevalent. Undoubtedly, in India, more than 300 million people are victims of food insecurity, chronic or seasonal. Hence one may easily guess the range and depth of the problem of child labour in India.

Concept

The concept of child labour is highly complex and contentious. This aspect relates to age, place of employment, payment, exploitation, deprivation of childhood, and denial of full development of the child.

It is really surprising that our national law, Child Labour(Prohibition and Regulation)Act 1986 does not define the term 'child labour' at all. The first question is concerned with age. Hence this law defines 'child' as a young person below fourteen years of age. But even the term 'child' has been defined differently in different Indian Laws. For instance, in Indian Penal

Code 1860, an enactment of colonial govt., section 82 defines a child as some one below seven years, that is, any deviant rganiza or unexpected/unusual action of a child below seven years is not considered a crime. Our constitution (Article 45, 39, 24) itself defines a child as some one below fourteen years of age. Similarly the Census of India, Apprentice Act 1961, Beedi and Cigar Workers Act, 1966, and Motor Vehicle Workers Act 1961 define a child as one below fourteen years. However, in most of the United Nations Conventions, especially Convention on Child Rights (1989) as well as ILO Conventions (15th and 16th of 1921) define child as a young person below 18 years of age. Interestingly India consented and signed the Convention on Child Rights (1989) on 12th November 1992. Thus there is a contradiction between international laws and national laws as well as between different national laws far as the age /definition of the child (hence child labour) is concerned. As one is considered adult at the age of 18 years, hence in my view all persons below 18 years of age should be included in the definition of child.

Employment

Second issue relates to place of employment. That is, whether a child employed in the family works may be considered a child labour or an outside employment is a necessary condition for being a child labour? The answer to this question would depend on how we look at the issue - narrowly or comprehensively. In a narrow sense, one may think that children's working in the family agriculture tasks, petty business works, (shop keeping) small artisan works (carpentry, pottery, blacksmith etc) or services should not be considered as child labor because these are their 'own tasks' or family tasks, not other's tasks. Here the cultural identity of 'we' versus 'them' immediately arises - our family, our works, our needs versus their family, their works and their needs. But the question may also arise whether these family tasks are full time or part time? If these tasks are full time, that is, the child has to work for the full day as his parents and other adult members do, then certainly it comes under the definition of child labour. On the other hand, if a child performs family tasks only part time and his family takes care of his schooling and other requirements, he may not be branded as a child labour. But here we include both types as child labour because both full time and part time employment of child deprives him/her from childhood.

Third aspect is paid versus unpaid work of the child. That is, whether for being child labour one is to be paid or even unpaid work of a child would come under the definition of child labour. For instance, first a child is engaged by an employer for grazing of his cattle or at a tea shop and is given only food or only clothes or both but no payment of wages in cash or grains etc. Second, a child performs the works of an employer without any payment or even food for the advance or debt taken by his family from the latter. Third, a child is given raw materials (like tendu leaves for beedi-making, or wool for carpet-making, or yarn for weaving of cloth, etc) by an outsider employer through a middleman to work at the farmer's house itself on piece rate basis. Fourth, a child works as a domestic help in the house of an official and is given food and clothes in return as well as some rupees on monthly basis.

Issue of Child Labour at National Level

During 1920's in colonial India also the issue of child labour was raised both officially and unofficially. For instance, in 1929, the Royal Commission on Labour in India was established and it submitted its report in 1931 in which the pathetic status of child labourers was described in terms of taking work for long period (10-12 hours), prevalence of the condition of almost slavery, bondage and forced labour, corporal punishment for petty mistakes, pledging of children by their parents to some employers, nexus of moneylenders, landholders and factory owners in multiple exploitation of child labourers, no food, no interval, no weekly holidays and no leisure. It had noted the practice of pledging of children by their parents to employers, especially in carpet and beedi-making tasks, particularly in Amritsar and Ahmedabad. On the other hand in, 1931, at the Karachi session of Indian National

Congress, a resolution was passed for the protection of the labourers, including child labourers, which specifically emitted that the children of school-going age should not be employed in hazardous works like factories and mines. Consequently Labour Sub-Committee of Indian National Congress included following points in its report submitted in 1940:

- (i) work and life conditions (including work hours) could be regulated;
- (ii) correlating with the education system, the minimum age of employment should be slowly raised to 15 years;
- (iii) Work hours should be limited to 9 in a day and 48 in a week;
- (iv) Such a method of wage fixation should be used so that the labourer may get living wage and minimum wage.

Legal Initiatives

Needless to mention here that the political guru of Mahatma Gandhi, Gopal Krishna Gokhale, in the capacity of the President of Indian National Congress, had appealed in early twentieth century to the British Govt. for free and compulsory education of all the children so that they may not be deprived of the golden opportunity of getting knowledge and may not suffer as child laborers. However, the British

govt. had already made a law - Factories Act 1881 - wherein it was provided that the children below seven years could not work in factories. Further children were not allowed to work in two factories and/or to work for more than nine hours. For the first time this law provided four days leave in a month but this law was applicable only in those factories where there were one hundred or more labourers. Further law had narrowly defined the children as those below seven years of very tender age whereas most of the child labourers start working after 7 years. To be fair, in the light of the recommendations of Royal Commission on Labour in India (1931), the British govt. made the first significant law in favour of child labour in 1933, known as Children (pledging of labour) Act 1933. This law clearly declared the pledging of child laborers by their parents to some employers through written bonds by taking some advances from the latter as illegal. It defined young person below 15 years as child labour.

Later another law, known as Children's Employment Act 1938, was made by the British govt. It fixed 14 years as the minimum age for employment in carriage of passengers at railways and holding of luggage at port, beedi-making, carpet-weaving, cement-manufacturing, cloth-printing, dyeing and weaving, making of match boxes, cutting of mica and tanning works. Their age certificate was made compulsory in such employment but unfortunately the term child labour was not defined in this Act, rather it allowed the children above 14 years but below 17 years to work in prohibited category of works/industrial processes/occupations. After independence a central law, known as, Children's Employment (Amendment) Act, 1951 prohibited the children of the age of 15-17 years to work at night a railways and ports. Secondly, it made mandatory for the employers to maintain registers regarding the young persons below 17 years employed by them. Again Children's Employment (Amendment) Act 1978 was made by the govt of India where the children below fifteen years of age were prohibited to pick up coal and clean cinders in railway complexes, to work in construction works, catering establishment, and work near railways lines or between two railway lines. But this law, too, was not

comprehensive. Later, in 1986, government of India legislated Child Labour (Prohibition and Regulation) Act 1986. It has defined child as a young person of 14 years of age but it, too, did not define the term 'child labour'. Its salient features are as follows:

- (a) Maximum work hours can not exceed six;
- (b) Half an hour's rest in between 6 hours is to be given;
- (c) Children are not allowed to work from 7 PM to 8 AM;
- (d) prohibition to take work for more than three hours at a stretch;
- (e) One weekly holiday;
- (f) To maintain a register for children employed and in case of any dispute regarding age a certificate is to be issued by a competent medical officer;
- (g) The competent government (Central or State) to make rules regarding sanitation, health care and facilities for labourers;
- (h) In case of violation of the provisions of the Act, the employers of child labourers will be punished - minimum three months' imprisonment and maximum one years' imprisonment or minimum 10,000/- rupees as fine and maximum 20000/- rupees as fine or both for the first time offenders; for second time offence minimum 6 months' and maximum two years' imprisonment;
- (i) The Act (as amended till now) prohibits the employment of children below 14 years of age in 16 occupations and 65 industrial processes.

However, the Child Labour (Prohibition and Regulation) Act 1986 does have following lacunae:

- (a) under section 2 (x) the definition of 'workshop' does not include those complexes given under section 67 of Factories Act 1948. Therefore the employers take undue benefit of this loophole.
- (b) Under section 2 (5) there is a pretty scope that an employer may employ his family's children even in hazardous works. Actually some employers, who run their economic activities at their residences, employ child labourers there but claim that they are their

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- family members. The Employment of Children Act 1938 was stronger than this Act in this regard as that law provided that without hiring children from outside only family children could be employed.
- (c) This act is not applicable to Govt schools and govt aided/rganizati schools; thus many private schools engage child labourers in taking the undue advantage of this provision.
- (d) Under section 2 (x) 'Industrial Process' is mentioned but it is not as comprehensive as any production process since the latter also includes non-industrial productive processes.
- (e) Under section 7 it should be added that the children can not be employed at piece rate so that the employer is bound to pay the minimum wages to child labourers like adult labour.
- (f) Under this act simply regulation of certain works/processes is not sufficient because any work due to which the child labourers are deprived of their education, play and childhood, becomes hazardous for them.
- (g) regarding the medical certification of age it is quite probable that given the prevalent corruption the medical officer will act as per whims of the rich employers. Instead, there should be provision that the onus for age proof should be on the employer, that too, before the employment of the children. Age certificate produced must have been issued by the Registrar of Birth and Deaths or schools.
- (h) Under this Act there is no provision for imposing tax on the employers for creation of national Child Labour Welfare Fund, so that it may be utilized for children working in regulated activities.
- (i) The biggest failure of this Act is that it is not applicable to informal activities wherein 90% of child labour is engaged.
- (j) Under this Act the term 'child labour' has not been defined; only child has been defined as a young person below 14 years. Further as per ILO conventions and UN convention of 1989 (CRe) as well as some national laws (Motor Vehicle Act, Merchant Shipping Act, etc), this age should be raised up to 18 years because only then a person becomes adult and till then one may get at least 10-12 years of schooling.
- (k) Under the Act the definition of 'place of work' is every narrow, it should include agricultural activities, fishery activities, afforestation, process of domestic production, micro enterprises operated by family members and the like.
- (l) Earlier the Employment of Children Act 1938 duly provided that it was compulsory for the employer to inform the labour/factory inspector before starting any industry of prohibited processes for children, but unfortunately Child Labour Act 1986 does not have such provision, hence the employers take undue advantage of this loophole.
- (m) The act should have a provision to publicise all the hazardous occupations and production processes for children, so that common people may be aware of these and do the needful in case of their violation.
- (n) The penal provision should be made more tough and both the fine and imprisonment should be enhanced to 50000/- rupees and two years for the first offence and its double for the subsequent offence.
- (o) In addition to labour/factory inspectors, a panel of the rganizati trade unions, accredited journalists and NGOs should also be allowed to check whether child laborers work in an enterprise or not. They should then report the matter to the concerned labour/factory inspectors or superior officials.
- Now we need to discuss about the constitutional provisions regarding child labour. In part III of Indian constitution fundamental rights to citizens are provided and therein Article 24 clearly provides that any child below 14 years would not be employed in a factory or mines or other hazardous employment. This provision is mandatory and

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therefore any aggrieved person may move to High/ Supreme Court for its implementation in case of any violation. However, there, too, the term 'hazardous' has not been defined. Hence its undue advantage is taken by the employers. On the other hand, in Part IV of the constitution, Directive Principles of State Policy also have some provisions in this regard. For instance, under Article 39 (E) the State has to ensure that children's tender age is not misused and any Indian citizen should not work under compulsion such tasks/occupations which are against his age or strength. Similarly Article 39 (F) provides that State should provide such facilities and opportunities so that the children may development with freedom, dignity and in a healthy way and their childhood and adulthood should not suffer physically and morally. Further Article 45 clearly says that State shall endeavor to provide free and compulsory education to all children below 14 years within ten years from the date of the enforcement of the constitution. Our

constitution came into effect on 26th January 1950 and by 26 January 1960 all children should have been given free and compulsory education.

But it did not happen and still about 1/3 rd of our population is illiterate (literacy being 65% only). Actually in the light of this Article there was no national law (and rules) legislated by the Parliament. Now our constitution has been amended and under Article 21A educating has been made a fundamental right and the law has come into effect since April 2010. But Supreme Court in K.P. Unnikrishnan Versus Union of India declared free and compulsory education a fundamental right by extending the Article 45 way back in 1993. Moreover, under Article 47 of Indian constitution the state should take steps, as its primary duty, to provide nutrition, raise standard of living and improve the public health of the citizens. With the increasing literacy, mass awareness, and public pressure, the State is bound to pay heed to these directive principles in course of time.

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PRESS INFORMATION BUREAU

National Urban Health Mission (NUHM) as a sub-mission under the National Health Mission (NHM)

The Union Cabinet gave its approval to launch a National Urban Health Mission (NUHM) as a new sub-mission under the over-arching National Health Mission (NHM). Under the Scheme the following proposals have been approved :

1. One Urban Primary Health Centre (U-PHC) for every fifty to sixty thousand population.
2. One Urban Community Health Centre (U-CHC) for five to six U-PHCs in big cities.
3. One Auxiliary Nursing Midwives (ANM) for 10,000 population.
4. One Accredited Social Health Activist ASHA (community link worker) for 200 to 500 households.

The estimated cost of NUHM for 5 years period is Rs.22,507 crore with the Central Government share of Rs.16,955 crore. Centre-State funding pattern will be 75:25 except for North Eastern states and other special category states of Jammu and Kashmir, Himachal Pradesh and Uttarakhand for whom the funding pattern will be 90:10.

The scheme will focus on primary health care needs of the urban poor. This Mission will be implemented in 779 cities and towns with more than 50,000 population and cover about 7.75 crore people.

The interventions under the sub-mission will result in

- Reduction in Infant Mortality Rate (IMR)
- Reduction in Maternal Mortality Ratio (MMR)
- Universal access to reproductive health care

- Convergence of all health related interventions.

The existing institutional mechanism and management systems created and functioning under NRHM will be strengthened to meet the needs of NUHM. Citywise implementation plans will be prepared based on baseline survey and felt need. Urban local bodies will be fully involved in implementation of the scheme. NUHM aims to improve the health status of the urban population in general, particularly the poor and other disadvantaged sections by facilitating equitable access to quality health care, through a revamped primary public health care system, targeted outreach services and involvement of the community and urban local bodies.

Background

The Union Cabinet in its meeting held in April 2012 has already approved the continuation of the National Rural Health Mission (NRHM) and the other sub-mission under NHM till 31.3.2017.

Amendments in the National Food Security Bill Introduced in the Lok Sabha Bill Provides Rice at the Rate of Rs 3 and Wheat at Rs 2 Per Kg Food Security Allowance in Case of Non Supply of Foodgrains Proposed Special Focus on Nutritional Support to Women and Children Women to Get 6000 Rs Maternity Allowance Besides Nutritional Food

The National Food Security Bill was introduced in the Lok Sabha on 22nd December, 2011 to addresses the issue of food security in a comprehensive manner, by adopting a life cycle approach. The Bill was introduced after a wide-ranging consultation with various stakeholders.

After introduction, the Bill was referred to

Standing Committee on Food, Consumer Affairs and Public Distribution, who interacted with other Central Ministries, various other organizations and individuals and visited States before submitting its report to the Speaker, Lok Sabha on 17th January, 2013. The recommendations of the Standing Committee were examined in consultation with concerned Central Ministries and also with the Food Ministers and Food Secretaries of States/UT.

Based on the recommendations of the Standing Committee and views of various stakeholders thereon, the Government decided to move certain amendments to the Bill. These amendments seek to make the framework of the proposed legislation simpler, provide more flexibility to States/UTs in its implementation and to address some of the concerns raised by them.

Main amendments to the Bill are as under:

- Coverage and entitlement under Targeted Public Distribution System (TPDS): Instead of coverage of upto 75% of the rural population and upto 50% of the urban population under two categories of priority and general households with different entitlements and issue prices provided in the original Bill, there would be only one category of beneficiaries with uniform entitlement of 5 kg per person per month.
- Protection of entitlements under Targeted Public Distribution System: The entitlement of Antyodaya Anna Yojana (AAY) households, which constitute poorest of the poor will, however, be protected at 35 kg per household per month. It is also proposed to accept the recommendation of the Committee to protect the existing allocation of foodgrains to the States/UTs, subject to it being restricted to average annual offtake during last three years (2009-10 to 2011-12).
- State-wise coverage and identification of beneficiaries: Corresponding to coverage of 75%/50% of the rural/urban population at the all India level, State-wise coverage will be determined by the Planning Commission. The work of identification of

eligible households is proposed to be left to the States/UTs, which may frame their own criteria or use the Social Economic and Caste Census (SECC) data.

- Subsidized Prices under TDPS and their revision: Uniform prices of Rs. 3/2/1 per kg for rice/wheat/coarse grains will be applicable to all eligible beneficiaries. It is proposed to fix these prices for the first three years of implementation of the Act, and thereafter link the same suitably to MSP.
- Cost of intra-State transportation & handling of foodgrains and FPS Dealers' margin: In order to address the concerns of States/UTs regarding additional financial burden, it is proposed that Central Government may provide assistance to States towards cost of intra-State transportation, handling of foodgrains and FPS Dealers' margin, for which norms will be devised.
- Maternity benefit: It is proposed to allow States/UTs to use the existing machinery of District Grievance Redressal Officer (DGRO), State Food Commission, if they so desire, to save expenditure on establishment of new set up.

At the coverage and entitlement now proposed, total estimated annual foodgrains requirement is 612.3 lakhtons and the corresponding estimated food subsidy for implementation of NFSB, at 2013-14 costs, is about Rs. 1,24747 crore. When compared to the estimated food subsidy requirement under existing TDPS and Other Welfare Schemes, the additional food subsidy implication is about Rs.23,800 crore per annum. Requirement for assistance to States for meeting the expenditure on Transportation, Handling and FPS Dealers' margin, etc., would be additional.

Highlights of Amended Bill

The National Food Security Bill is a historic initiative for ensuring food and nutritional security to the people. It gives right to the people to receive adequate quantity of foodgrains at affordable prices. The Food Security Bill has special focus on the needs of poorest of the poor, women and children. In case of non-supply of foodgrains now people will get Food

Security Allowance. The bill provides for wide scale redressal mechanism and penalty for non compliance by public servant or authority. Other features of the Bill are as follows;

Coverage of two thirds population to get highly subsidized foodgrains: Upto 75% of the rural population and upto 50% of the urban population will have uniform entitlement of 5 kg foodgrains per month at highly subsidized prices of Rs. 3, Rs. 2, Rs. 1 per kg. for rice, wheat, coarse grains respectively. It will entitle about two thirds of our 1.2 billion population to subsidised foodgrains under the Targeted Public Distribution System (TPDS).

Poorest of the poor continue to get 35 kg per household: The poorest of poor households would continue to receive 35 Kg foodgrains per household per month under Antyodaya Anna Yajna at subsidized prices of Rs 3, Rs 2 and Rs 1. It is also proposed to protect the existing allocation of foodgrains to the States/UTs, subject to it being restricted to average annual offtake during last three years.

Eligible households to be identified by the States: Corresponding to the coverage of 75% rural and 50 % of urban population at all India level, State wise coverage will be determined by the Planning Commission. The work of identification of eligible households is left to the States/UTs, which may frame their own criteria or use Social Economic and Caste Census data.

Special focus on nutritional support to women and children: There is a special focus on nutritional support to women and children. Pregnant women and lactating mothers, besides being entitled to nutritious meals as per the prescribed nutritional norms will also receive maternity benefit at least of Rs. 6000/-. Children in the age group of 6 months to 14 years will be entitled to take home ration or hot cooked food as per prescribed nutritional norms.

Food Security Allowance in case of non supply of foodgrains: The Central Government will provide funds to States/UTs in case of short supply of food grains from Central pool, In case of non-supply of food grains or meals to entitled persons, the concerned State/UT Governments will be required to provide such food security allowance as may be

prescribed by the Central Government to the beneficiaries.

States to get assistance for intra-State transportation and handling of foodgrains: In order to address the concern of the States regarding additional financial burden, Central Government will provide assistance to the States towards cost of intra-State transportation, handling of foodgrains and FPS dealers' margin. This will ensure timely transportation and efficient handling of foodgrains.

Reforms for doorstep delivery of foodgrains: Reforms have been initiated for doorstep delivery of foodgrains, application of information and communication technology (ICT) including end to end computerisation, leveraging 'Aadhaar' for unique identification of beneficiaries, diversification of commodities under TPDS etc for effective implementation of the Food Security Act.

Women Empowerment—Eldest women will be Head of the household: Eldest woman of eighteen years of age or above will be head of the household for issue of ration card, and if not available, the eldest male member is to be the head of the household.

Grievance redressal mechanism at district level: There will be state and district level redressal mechanism with designated nodal officers. The States will be allowed to use the existing machinery for District Grievance Redressal Officer (DGRO), State Food Commission, if they so desire, to save expenditure on establishment of new redressal set up. Redressal mechanism may also include call centers, helpline etc.

Social audits and vigilance committees to ensure transparency and accountability: Provisions have also been made for disclosure of records relating to PDS, social audits and setting up of Vigilance Committees in order to ensure transparency and accountability.

Penalty for non compliance: The Bill provides for penalty to be imposed on public servants or authority, if found guilty of failing to comply with the relief recommended by the District Grievance Redressal Officer (DGRO).

Expenditure: At the proposed coverage of entitlement, total estimated annual foodgrains

requirement is 612.3 lakh tons and corresponding estimated food subsidy for the Bill at 2013-14 costs is about Rs.1,24,724 crore.

India is the Second Largest Producer of Fruits, Vegetables and Foodgrains

Food Agriculture Organisation (FAO) data shows that India produces 76424.2 thousand tonne of fruits; 156325.5 thousand tonne of vegetables and 388269.2 thousand tonne of foodgrains during 2011.

DEVELOPMENT OF

GEOTHERMAL BASED POWER PROJECTS

A Memorandum of Understanding (MoU) has been signed by NTPC on 16th February, 2013, with Chhattisgarh State Renewable Energy Development Agency (CREDA), an Agency constituted under Department of Energy, Government of Chhattisgarh, to explore the potential of geothermal resources and subsequently implement geothermal based power project at Tatapani in the State of Chhattisgarh on Build, Own and Operate (BOO) basis. Salient features of the MoU are given below:

- CREDA will grant NTPC exclusive rights to explore the geothermal resources and subsequently to implement techno-economic viable geothermal power project at Tatapani.
- NTPC shall explore the geothermal resources in Tatapani and prepare Detailed Project Report (DPR) / Feasibility Report (FR) for assessing the techno-commercial viability of the identified project.
- NTPC will explore all possibilities for maximizing the grant from National/ International agencies. NTPC shall be responsible to obtain all statutory clearances/ approvals related to Foreign Direct Investment (FDI).
- Once techno-economic viability is established, NTPC shall implement the geothermal based project at Tatapani on BOO basis.
- CREDA with the help of/ as per directions of the Government through State Investment

Promotion Board (SIPB) will facilitate expeditious grant of permissions, approvals, no objection certificate, recommendation etc. under the purview of the State Government.

- All infrastructure support such as use of existing roads/kucha roads/paths etc. to the location of site would be provided by the State Government as per the requirement/request of CREDA.

A geothermal project site, Tatapani, located at about 92 km northeast of Ambikapur, District Balrampur, Chhattisgarh has been identified by CREDA for feasibility

NEUTRINO OBSERVATORY

The Atomic Energy Commission has approved an XI Five Year Plan Project titled 'Development of site infrastructure and prototype for India based Neutrino Observatory' at an estimated cost of ` 66.31 crore. Under this Project, as part of pre-project activities the following activities have been taken up: a) 26.825 Ha. of land for establishing the Project has been acquired at Pottipuram Village, Theni District, Tamil Nadu and 12.155 Ha. of land for establishing the National Centre for High Energy Physics (NCHEP) has been acquired at Madurai, Tamil Nadu. b) Clearances from Ministry of Environment & Forests, Govt. of India and also from Department of Environment & Forests, Govt. of Tamil Nadu have been obtained for the above Project. c) Work of development of infrastructural facilities for the Project has been initiated by entering into a Memorandum of Understanding with Tamil Nadu Water Supply and Drainage Board (TWAD) for supply of water to the Project site and with the Highways Department, Govt. of Tamil Nadu for laying / widening the approach road to the project site. d) The detailed project report on the mega project on India based Neutrino Observatory, with an estimated cost of ` 1500 crore, is under examination and the project is yet to be approved. As per this project report, the scheduled time of completion of the project is seven years from the date of approval of the Project.

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SCIENCE REPORTER

⇒ PROMISING FUTURE OF MOBILE TECHNOLOGY

Forty years ago, 45-year-old Martin Cooper made the first nondheld mobile call in public. On 3rd April 1973, Cooper made the world's first mobile call from a Manhattan street corner to Joel Engel, his rival in AT&T. Widely regarded as the "father of the cell phone", Cooper told Enget "I'm calling you on a real cell phone; a personal portable hand-held cell phone."

The clunky- heavy phone was Motorola's DynaTac 8000x far removed from the modern, ultra-thin, super-light smartphones of today It was 9 inches tot; an inch and a half wide and weighed 2.5 pounds - no wonder it was called "the brick". It had a battery life of only 20 minutes and a single-line text-only LED screen. It would be a decade before the phone would finally reach the hands of consumers at a whopping cost of \$ 3,995.

That was the time when cell phones were proud possessions of the elite and the wealthy. Today cell phones have broken all class barriers. A new United Nations study has found that more people around the world have access to a cellphone than to a working toilet! The study claims that of the world's estimated 7 billion people, 6 billion have access to mobile phones. However, only 4.5 billion have access to a toilet.

Mobile phone technology has come a long way ever since 1947 when AT&T first commercialised its Mobile Telephone Service. The service was introduced in a hundred towns - calls were set up manually by operators; to talk the user had to depress a button on the handset and release the button to listen. And it was expensive. This "08" service was

followed by the first generation (1G) analog cellular network introduced in the early 1980s, which was based on car phones and used in business. Then came the second generation (2G) digital cellular networks between 1993 and 2000. Beyond 2000, with the arrival of the third generation (3G) broadband data services and the Internet smartphones soon became a reality. The state-of-the-art, fourth generation (4G) native-IP networks were standardised in 2012.

Today's mobile phones do much more than merely making calls. You can take photos, play music and games, watch video clips, send emails, chat with friends, surf the net download maps, and use it as a navigator. They are also driving healthcare, education, government services delivery-election campaigns, banking and much more. In fact more often now we see phones being used for everything but making calls.

But as with other technologies, cell phones have also been used for nefarious means such as blowing up bombs remotely and clicking and circulating unwanted pictures. In some cases the obsession with mobile phones has even been fatal for young children who have been mowed down by trains or knocked down by vehicles, glued as they were to their mobiles. However, the journey of the cell phone from "the brick" to the sleek and ultra-lightweight cell phones has been an exciting one so far. And experts believe there is still a lot of innovation yet to come.

Apart from more memory and the capability to create better pictures, display brighter images, and access the Internet at higher speeds, mobiles hold the potential to usher in a cashless society sometime in the future. There are other innovations already

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happening such as wireless charging, mobile-enabled interactive billboards where you could control and interact with billboards and store-front displays through your mobile, wearable smart phones with flexible screens, and even a smart phone that could predict where your friend could be the direction a criminal could be moving in. And there's still a long road ahead for innovations.

⇒ THE SCOURGE OF ELECTRONIC WASTE

There was a time when people wrote letters and waited expectantly for the postman to bring in some news of relatives settled far away. But today at the click of a mouse you can send letters and talk to your relatives and friends overseas. At the click of a button you can send messages. What's more, you carry your own communication and music system with you wherever you go.

During the past few decades, there have been radical changes in human life style. Electronic goods and gadgets have become essential components of urban households and are now increasingly making their way into rural areas as well. LCD TVs, desktop computers and laptops, fancy mobile phones, i-pods and i-pads, digital cameras, and fax-photocopy machines have become widely prevalent.

Thanks to a marketing blitzkrieg by manufacturers and our own fetish for possessing the newest models of electronic gadgetry, companies are all too happy to keep their assembly lines running. But do we ever sit down to think about the fate of these gadgets at the end of their useful life? These electronic goods turn into a neglected obsolete heap of hazardous elements. The problem has today taken on mammoth proportions in India too. Waste management, which is already a neglected area in India, is becoming more complicated with the invasion of electronic waste.

⇒ BURGEONING BURDEN OF WASTE

Electronic waste is a popular informal term for electronic products near the end of their useful life. E-waste or WEEE (Waste Electrical and Electronic Equipment) is waste consisting of broken or unbroken electric and electronic appliances.

The term electronic encompasses a wide range of home and business electronic goods, including

television, monitor, computers, computer peripherals, audio and stereo equipments, VCR's and DVD players, video camera, fax and copy machines, cellular phones, wireless devices etc (Saxena et al' proceedings of RAWM, 2009). In most cases e-waste comprises relatively of expensive and essentially durable products such as house appliances, IT and telecommunication equipments, lightning equipments, toy and sports equipments, medical devices, monitoring and control instruments. Most of these devices are made up of hazardous elements, heavy metals and harmful chemicals (Ramachandra, Varghese, 2004).

India as a developing economy is becoming an important stream of e-waste in terms of both quantity and toxicity. According to a recent study by Dwivedy and Mittal (2010a), the total WEEE estimates during 2007-11 will be around 2,49 million MT. The study reports the current annual growth rate of e-waste in India to be within 7-10%.

Consumers bought almost 900 million mobile phones in 2006 and over a billion in 2007 (UNEP estimates). The UNEP study also predicts that by 2020 the amount of e-waste from dumped mobile phones in China will be about seven times larger than it was in 2007, and in India it will be eighteen times higher. At present India alone produces 1,700 tons of e-waste from mobiles. Most of these discarded mobile devices end up in landfills or are given to local collectors, who extract precious metals in an environmentally hazardous manner.

Hazardous Waste

Most often, the discarded electronic goods end up in landfills along with other municipal waste or are openly burnt releasing toxic and carcinogenic substances into the air. Electronic waste, especially computer waste, consists of heavy metals like Cadmium, Mercury, Barium and Lead, Toxic chemicals such as Poly Vinyl Chloride (PVC), dioxin and furans released from burnt computers, Poly Chlorinated Biphenyls (PCBs) released from older capacitors and transformers, lead from batteries, etc, get accumulated in the waste.

Given the fact that these chemical elements are non-biodegradable and persist in the environment for a long time, they pose serious risks for environmental



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and human health, This makes e-waste the top priority in waste management.

According to the United Nations, global e-waste production is 40 million tons per year. It is estimated that the total waste generated from electric and electronic equipments in India is approximately 146,000 tons per year and increasing every year (CIL 2006), However, according to reports put out by the Union ministry of environment and forests (MoEFJ, by the end of 2012, India would have generated a whopping eight lakh tonnes of e-waste - up eight times in the past seven years, Considering the growth rate, the volume of e-waste is expected to reach nearly 1,72 million MT by 2020, The Central Pollution Control Board has also said that India is expected to exceed by 8 lakh tons of e-waste this year, which is double of what it was last year.

The top most e-waste generating cities are MumbaL DeihL Chennai and Bangalore, Currently, with the introduction of smart phones and its easy affordability the situation seems to be getting grimmer. The major e-waste generators are individuals, small businesses, large corporate organizations, government organizations, various institutions and original equipment manufacturers. Industry estimates say, 70% of e-waste generated is from businesses and 30% from consumers. An extremely high obsolescence rate of 30% per annum makes nearly 30,000 computers obsolete in Bangalore city from IT industry alone (Rai. A.K., Proceedings of RAWM, BHU 2009).

It is also worth noting that huge quantities of precious metals are dug out of the Earth for manufacturing of electronic goods. Computers and mobile phone production uses up to 3% of the world's gold and silver every year and 1 3% of palladium, 15% of cobalt and huge quantities of copper, nickel, steel, and aluminum also. These mining and manufacturing activities also have negative environmental consequences; they spew tons of carbon dioxide into the atmosphere.

Additionally, considerable quantities of e-waste are reported to be imported (Agarwal. 1998; Toxic Link 2004). Developed countries such as the US, dispose their waste to India and other Asian countries. This is conducted under the name of donations from developed nations. Though the

Indian Supreme Court banned the import of hazardous waste in 1 997, 600 tons of e-waste still entered the country in the last six months under the guise of charitable or re-usable materials. The major reasons of this import are cheap labour and lack of occupational standards in developing countries. This appears to be a form of neo- colon ism in which hazardous waste and toxic substances of developed countries flow towards the world's poor nations.

Handling E-Waste

Currently, in India, e-waste processing is being handled in two ways: formal and informal recycling. According to a recent study, the Indian recycling industry recycles 19,000 million tons e-waste every year. Of which, 95% electronic waste is recycled in the informal sector and only 5% goes for formal recycling.

There is a very well-networked informal sector in the country (Sinha and Mahesh, 2007) involving key players like vendors, scrap dealers, dismantlers and recyclers. However, the disposal and recycling of computer specific e-waste in the informal sector are very rudimentary. The process followed by these recyclers is product reuse, refurbish, conventional disposal in landfills, open burning and backyard recycling (Dixit. 2007).

Of late, formal recycling is being pursued in a big way. Some initiatives have been taken to dismantle and dispose electronic items in the most environmentally sound manner; they also comply with occupational health and safety norms of the workers. Some major e-waste recycling companies are Trishyiraya (Chennai), Infotrek (Mumbai) and E-parisaraa (Bangalore). Sony (Electronics Company) has been on the recycling bandwagon way before the recycling rules came in to effect.

But, as already mentioned, this is the story of just 5% of the e-waste generated in India; the remaining 95% is sold to scrap dealers in underground/informal recycling markets like Seelampur, Mayapuri, Shastri Park, Meerut. Noida, etc. According to the recent report by Toxics Link (2012), a leading environmental NGO, about 1 tonne of e-waste is daily passed through the hands of about 300 dismantling units alone at Seelampur in Delhi.

There are 25000 recyclers working in Delhi NCR only. Similar trends are observed in Ferozabad, Mumbai, Bangalore, Chennai, and Pune. Workers working in informal recycling units, especially children, get exposed to hazardous chemicals that pose serious health risk. Environmentally sound recycling of e-waste requires sophisticated technology and processes that are not only very expensive, but also need specific skills and training for the operation. Whereas, in the informal sector workers are poorly protected.

Presently, around 23 recycling facilities in varying levels of infancy have come up in the organized or the formal sector to address this problem, which when fully operational could recycle 60% of the estimated annual e-waste inventory (Jain, 2010b).

Environmental Hazard

Environmental hazard caused by electronic waste is not much talked about. There is no exclusive study done in India to understand the effect of e-waste on environment and ecosystem services. Most of the e-waste generated in Indian cities lands up in garbage bins and eventually in landfill sites, without any segregation mechanism.

In the landfill sites, non-biodegradable electronic waste remains untreated for a long time. It becomes a source of contaminated leachate, which pollutes the ground water and may also contaminate drinking water supply. Acids and sludge obtained from melting computer chips cause acidification of the soil. The pollutants being non degradable and toxic, may enter the biological food chain by absorption from plant roots via soil and ground water contamination. Bioaccumulation of heavy metals and other organic pollutants is a grave threat to life of higher animals and also humans.

To deal with this serious problem the Indian government has taken many steps and has come up with innovative measures. The Ministry of Environment and Forests is the nodal agency for policy, planning and coordinating the environment programmes, including electronic waste. The management of e-waste was covered under "management, handling and trans-boundary movement" rules 2007, part of EPA 1986 and

Environment and Forests Hazardous Wastes management rules 2008. India is also a signatory to the Basel Convention on the control of trans-boundary movement of hazardous waste.

A notification on E-waste (Management and Handling) Rules, 2010, under EPA 1986 has been notified in May 2011 to address the safe and environment friendly handling, transporting, storing, and recycling of e-waste. In May 2012, new rules were issued by the MoEF, which would hopefully help in bringing some relief.

The Department of Information Technology has also taken several significant steps to deal with the issue of electronic waste in India. In order to address the urgent need of cost-effective and environment friendly technology of e-waste disposal, DIT has initiated many R&D projects:

Project entitled "development of processing technology for recycling and reuse of electronic waste" has been implemented at the National Metallurgy Laboratory in March 2011.

A testing and certification facility has been created at CMET, Hyderabad, India for hazardous raw materials used for manufacturing electronic components. This certification would help Indian companies to export their products to the European Union. Another project on novel recovery and conversion of plastics from WEEE to value-added products is being carried out at the Central Institute of Plastics Engineering & Technology (CIPET), Bhubaneswar.

- A programme on "environment management system for information technology in India" has been implemented.
- A project on "development of lead-free X-ray absorbing coating material for CRT TV" has been successfully implemented in March 2011.

Despite such a wide range of environmental legislations and measures taken in the country, the problem of e-waste is still a neglected one. There are several grey areas that need to be addressed.

The growing quantity of e-waste is alarming. Keeping in mind the Indian scenario we need sophisticated e-waste management technologies with the ability to fix the current problems and also with the flexibility to take care of future changes in

quantity and quality of e-waste flows. Producers, industries, government agencies and also civil society must work in concurrence.

Government agencies along with the NGOs must adopt technical, administrative and legal measures, promote the use of environmental friendly

designs, adopt good marketing approaches, undertake capacity building activities such as training and awareness programs, establish a knowledge base and conduct studies that will develop inventories as well as p icy measures for e-waste management.

ARE CLONED ANIMALS HEALTHY?

The first live animals produced by cloning were there lamb offspring, born in 1996 by using differentiated cell populations of lamb. Out of three live births only one survived, and was named Dolly.

The creation of Dolly was a significant achievement. The effort showed that genetic material from a specific adult cell, programmed to express only a distinct subset of its genes, could be reprogrammed to grow an entirely new organism. She was cloned at the Roslin Institute in Scotland and lived there for approximately seven years from her birth in 1996, until her death in 2003. However, cloning Dolly was an a range of species including endeavor with a low success cattle, mice, goats, pigs, cats, rate - she was born after rabbits, horses, rats, dogs 277 eggs were used to create and ferrets 29 embryos. Successful It has been observed that gestation yielded three lambs artificially produced animals at birth, of which only one show high rate of fetal and lived for seven years. neonatal death. Additionally Since the creation of increased pre-, peri- and Dolly in 1996; significant post-natal mortality arising advances have been made in out of respiratory distress was understanding the molecular recorded in vitro embryo processes underlying normal production and nuclear and abnormal development. transfer of embryo. Although, With improvement of in vitro produced calves and technique in the following lambs have increased birth years, large numbers of weights (indicating full-term animal offspring were physiological maturity), these produced using cultured animals have reported health cell populations derived issues and short life spans from fetal and adult tissues. It is over a decade since the since then the technique has birth of Dolly but the health-been successfully applied to related pulmonary and cardiovascular abnormalities of artificially cloned animals remain a prime issue.

Scientists refute cloning procedure or involvement of genetic reasons for all health issues of cloned animals and attribute environmental reasons for this. For example, the first set of artificial goats produced by GTC Biotherapeutics (USA) in 1999 enjoy - so far - a productive life with normal clinical history and lifespan. While average lifespan of a standard goat in laboratory condition is 9 to 18 years, these three goats with normal lifespan are 13 years old now. Currently, these goats are being raised in a bio-secure farm and have normal reproductive performance and milk production. A survey of health of these goats by scientists of GTC Biotherapeutics revealed normal birth weight, weaning weight and time to remarkable findings. In puberty including overall addition, the goats have growth rate. Furthermore, acceptable reproductive recent laboratory analyses on histories and have given birth key biochemical parameters multiple times. Also, there for blood, glucose and are no clinical findings or any liver function showed no chronic ailments identified so far in these three animals.

These findings suggest that undue concern over creating artificially and animals is unfounded.

⇒ GENDER IMBROGLIO IN SPORT

The world of sports cannot escape being wracked by scandals every now and then. In recent times, while Lance Armstrong has been proven to have used "blood boosting" ways to enhance his

cycling performances, early this year Australian sports found itself neck deep in a quagmire of doping.

Indian sports, on the other hand, has been shaken by two gender test controversies in recent years. Even as the case of Pinky Pramanik became the

talk of the town some time back, many of us seem to have forgotten the name of Indian middle distance runner Santhi Sounderrajan who won the silver medal in 800 metres at the 2006 Asian Games in Doha. She failed the gender verification test and was stripped of her medal. It was reported that Soundarajan had a condition known as Androgen Insensitivity Syndrome. Gender verification tests for all female disguised as women in the Olympics to compete for certain contests. The International Association of Athletics Federation (IAAF) also made it mandatory for all female athletes to undergo a gender test - the so called crude pageant referred to as a "nude parade", where the athletes' bodies (mainly their genitals) were examined by a gynecologist. A Certificate of Femininity was given to those who passed the test and it was required to be presented before participating in these competitions.

To pacify the outrage over such humiliating parades, the International Olympic Committee later substituted such parades with a cheek swab (buccal smear) to test for an inactive X chromosome, which typically presents itself only in women. It is called the Barr body test. But even this test was not of much help in resolving controversial issues. It was found that about 1 in 1,000 people exhibited some sort of "intersex" conditions - ambiguous genitals or internal

sex organs that did not match their external ones or an extra chromosome such as men with an XXY combination.

⇒ BARR BODY TEST

Barr body, named after its discoverer Dr. Murray L. Barr, a Canadiancy to geneticist, is inactive single sex chromosome of the XX pair of sex chromosomes of females. Since this chromosome is double in number, only one remains active without adversely affecting the individual. The one inactive sex chromosome when stained with a specific dye appears as a black spot adhered to the inside of the nuclear membrane. This is a confirmatory test of femaleness.

Barr body testing was introduced in the 1966 Olympic Games in an effort to detect male athletes masquerading as females to gain a competitive advantage. The test however sometimes detected a number of cases of testicular feminization syndrome (TFS), a genetic condition in which an XY (male) zygote develops as a phenotypic female adult owing to failure of androgen receptors. Such individuals would also test positive for the presence of a Barr body. The disputed of case Santhi Sounderrajan is said to be of TFS.

SEX CHROMOSOME ABNORMALITIES

The sex status of human beings is defined at four levels: Chromosomal, internal organs (ovaries and testicles), external organs (breasts, vulva plus vagina, penis), and psyche (i.e. sexual identity).

In a XY human, a set of genes on the Y -chromosome triggers a series of actions that normally result into a male. "Female" is the default sex due to the absence of the Y. Besides, during the embryonic and developmental process the role of both female and male sex hormones in respective cases is also very important, without which the internal and external sex organs and psyche will not develop as expected.

In abnormal cases a person may either be born with undefined external genitals or have normal genitals at birth but may not develop secondary sexual characteristics at puberty. The person may also develop secondary sexual characteristics not matching with the external genitals. In some cases, the individual may turn to be a transgender.

There may be some other instances where either the individual is a chimera- resulting from a fusion of a distinct male and female embryo during foetal development. The individual may even contain various combinations of duplicated chromosomes in the genome (XXY, XXXY). While in the former case some tissues may contain XX and others the XY configuration; in the latter, all cells contain the Y chromosome but may or may not use it. This state is known as gynandromorphy, which has both female and male

characteristics and may have either ambiguous sex organs (the XY/XY configuration may not be evenly distributed throughout the body) or unambiguous male and female sex organs (hermaphrodite).

Some of the prominent sex determination anomalies are as follows:

Klinefelter Syndrome (XXY): Klinefelter syndrome occurs when a boy is born with one or more extra X-chromosome. An extra X chromosome causes a male to have some physical traits not usual with males. There are cases when men with an extra X chromosome lead normal lives and are not aware of it. This occurs in about lout of 1,000 males. Although in most of the cases men who have Klinefelter syndrome do not have obvious symptoms, some may have sparse body hair, enlarged breasts, and wide hips. But in almost all men the testicles remain small. In few cases the penis does not reach adult size. Voice may not be as deep as is the characteristic of a normal male.

Turner syndrome: It is a genetic condition in which a female does not have the usual pair of two X chromosomes and has a XO configuration. The most common feature is short stature, which becomes evident by about age 5. Early loss of ovarian function is also very common. The ovaries die prematurely and most ovarian tissue degenerates before birth. Affected ones do not undergo puberty unless they receive hormone therapy and most girls are unable to conceive and remain infertile. However, a small percentage of females have been found to retain normal ovarian function through young adulthood.

Congenital adrenal hyperplasia: Congenital adrenal hyperplasia refers to a category of inherited disorders of the adrenal gland. There are two adrenal glands - one located on top of each of both the kidneys. They secrete cortisol and testosterone hormones. People with congenital adrenal hyperplasia lack an enzyme the adrenal gland needs to make the hormones. At the same time, the body produces more androgen, a type of male sex hormone. This causes male characteristics to appear early or inappropriately. Congenital adrenal hyperplasia can affect both boys and girls. About 1 in 10,000 to 18,000 children are born with congenital adrenal hyperplasia.

Mullerian duct syndrome: Mullerian duct syndrome is a disorder of sexual development that affects males only. Males with this disorder have normal male reproductive organs, though they also have a uterus and fallopian tubes, the female reproductive organs. Uterus and fallopian tubes are derived from a structure called the Mullerian duct during development of the foetus. Individuals have the normal chromosomes of a male (46, XY) and normal external male genitalia.

Swyer syndrome: Swyer syndrome is a condition where individuals have one X chromosome and one Y chromosome in each cell. They have a female appearance. Here mutations in the SRY gene have been identified in 15-20% individuals. The SRY gene is located on the Y chromosome and provides instructions for making the sex-determining region Y protein which in turn acts as a transcription factor and binds to specific regions of DNA and helps control the activity of particular genes. This sex-determining region Y protein causes a foetus to develop as a male. But SRY gene mutations that cause Swyer syndrome prevent production of the sex-determining region Y protein or result in the production of a nonfunctioning protein. So a foetus whose cells do not produce functional sex-determining region Y protein despite having a Y chromosome will develop as a female.

Despite genetic configuration of a male, individuals have female external genitalia and a normal uterus and Fallopian tubes. However, they do not have functional gonads. Such individuals are typically raised as females and have a female gender identity. Hormone replacement therapy during adolescence to induce menstruation and development of female secondary sex characteristics is usually done in such cases. Although women with this disorder do not produce eggs, they may be able to become pregnant with a donated egg or embryo.

Women with a disorder called congenital adrenal hyperplasia possess ambiguous genitalia - enlarged clitorises that may look like small penises. Though they have ovaries and a uterus, and generally identify as females they might fail sex determination tests. Then there are players like Santhi Sounderrajan exhibiting complete androgen insensitivity syndrome. In karyotype analysis sometimes players are found to possess a male configuration of XX sex chromosomes but have the normal makeup of men, as their bodies don't respond to testosterone. They develop female genitals and breasts despite having testes, not ovaries. They would genuinely fail a female sex test based on chromosomes but they generally live their lives as women. All this has led to the latest testosterone standard test.

Though testosterone level is not a definite diagnostic for sex the International Olympic Committee presently sticks to this criterion only. The aim is to identify women whose high testosterone levels have performance-enhancing effects with regard to strength, power and speed giving them an unfair advantage over other female competitors. However, little research supports the view that elite athletes with naturally high testosterone levels fare better in sports than those with lower levels.

Under the current policy, XX-ers with naturally high testosterone could be declared ineligible to compete as women. Such criteria would however now favour players with XX like Santhi Sounderrajan who would be deemed to be women for the purposes of sports as they exhibit androgen insensitivity syndrome and thus have low levels of testosterone. Although this category would entail some hard judgment criteria but it's a smaller group seldom observed.

More and more experts are now reaching the consensus that sex determination tests of players must take into account all aspects such as chromosomes, genitals, gonads, and hormones in order to reach unambiguous and undisputed decision.

⇒ FROM THE RED FORT TO THE RED PLANET

The Budget Session that began this year on 21st February must have been music to the ears of

space lovers. President Pranab Mukherjee in his maiden address to the joint sitting of Parliament said, "Several space missions are planned for 2013, including India's first mission to Mars and the launch of our first navigational satellite. India is well up for launching its first space mission to Mars this year."

Prime Minister Manmohan Singh had also earlier announced the Mars Orbiter Mission in his Independence Day address in 2012.

Planet Mars

Mars is the fourth planet from the Sun and orbits the Sun at an average distance of about 23 crore km. It is also called the red planet because it appears as a fairly bright red, star-like object in the Earth's night sky. It looks like a reddish-orange disk when viewed through a telescope. It is about half the diameter of Earth and about one-tenth Earth's mass. Its surface is almost exactly the same as the surface of the dry land on Earth,

Mars is believed to be about the same age as Earth. It was formed from condensing cloud of gas and dust about 470 crore years ago. The distance between Mars and Earth varies as they orbit the Sun.

It varies from about 56 million km at their closest approaches to about 375 million km when the planets are on opposite sides of the Sun. Mars has ice caps at its north and south poles, These polar caps grow and shrink throughout the Martian year, just as the polar caps of Earth do.

Life on Mars

Mars is the most Earth-like place in our solar system. So it is only natural to wonder if the similarities extend to the existence of life, People have speculated about the possibility of life on Mars for centuries. Astronomers have often fueled the speculation that life may exist on Mars,

The 19th century Italian astronomer Giovanni Virginia Schiaparelli (1835- 1910) reported seeing long straight canals on Mars. Some astronomers also reported seeing evidence for seasonal colour changes on Mars that could be interpreted as evidence for vegetation, American astronomer Percival Lowell (1855-1916) and some other

astronomers of the early 20th century believed that the canals indicated the existence of an advanced civilization on Mars.

Lowell proposed that the canals were a planetary-scale irrigation project carrying water from the wet polar regions to the dry equatorial deserts. However, the idea of canals on Mars began to get doubtful with improved telescopes. Close-up images of Mars from the Mariner spacecraft finally proved the idea wrong. Scientists now know that windblown dust causes the colour changes and that the canals are no more than an optical illusion caused by the limitations of human eyesight at the telescope.

The idea of life on Mars got a dubious boost from photos released on 24 January 2008 of the surface of Mars taken by the Spirit rover. It apparently showed a human-like figure. It was actually a small piece of rock blown up to give the appearance of a human figure. This phenomenon is called pareidolia in psychology, where we often see faces in clouds and coffee stains.

A growing number of scientists still believe that some form of life could exist on Mars. Spacecrafts are still being sent to Mars in search for direct evidence of past or present life.

India's Mars Mission

Uninterrupted global attention on Mars has induced India's great interest on the Mars Mission. India has planned an ambitious, short-term programme of Mars exploration 'Mangalyaan-1' - to be launched by the Indian Space Research Organisation (ISRO). Mangalyaan meaning Mars-craft is an orbiter, It will not land on the surface of Mars, but encircle the planet.

This maiden mission to Mars is a "technology demonstrator" project aiming at a successful interplanetary mission, ISRO completed 125 crore (US\$23 million) of required studies for the orbiter last year. Thereafter, the Government of India approved the Mars Mission project on 3 August 2012, The total project cost may be about 454 crore (US\$ 83 million).

The orbit of Mars is elliptical. Mars happens to be closer to Earth every 26 months, In the near future, there are three windows of opportunity, They are in late 2013, in 2016 and in 2018, Indian scientists

are aiming to be ready for the 2013 opportunity, Otherwise we would have to wait another 26 months to launch our Mars-Craft.

Launching the Spacecraft

Indian's maiden Mars probe will lift off from ISRO's launching pad at Sriharikota in Andhra Pradesh, The space agency will use its trusted warhorse rocket Polar Satellite Launch Vehicle (PSLV-XL) to carry the spacecraft into space, The spacecraft will have bi-propellant system using monomethylhydrazine and di-nitrogen tetroxide as fuel with additional safety and redundancy features for Mars orbit insertion, In mid-October, Mangalyaan will be placed into the Earth orbit, in which the probe will keep revolving in order to achieve the necessary velocity to escape the Earth's gravitational pull. Then six engine firings will raise that orbit to one with an apogee of 215,000 km and a perigee of 600 km. Finally, it will be sent onto an interplanetary trajectory with the final firing.

The satellite is expected to exit the Earth's orbit on 26 November 2013 and embark on the journey to Mars, which is expected to last for around 300 days, Scientists will have to navigate the spacecraft from the Earth to Mars in deep space using the Deep Space Network at Baylalu on the outskirts of Bangalore, The ultimate stage, Mars orbit insertion, is planned for September 2014, Plans have been drawn up to insert the orbiter probe in an orbit around Mars on 22 September 2014. That would allow the orbiter to enter a highly elliptical orbit around the planet. The liquid rocket engine, capable of generating a 440-newton thrust, would be required to steer the spacecraft into the Martian orbit. The Mars Orbiter will go around the planet once in three days, its nearest point being only 371 km from the planet's surface and the farthest point about 80,000 km away.

The spacecraft will have a single solar array with three panels of 1400 × 1800 mm capable of generating 750 watts of power in the Martian orbit. It will also be equipped with a 36 AH Lithium-ion battery for power storage. If the mission of Mangalyaan- 1 is successful, India would be propelled to the elite club of five nations comprising the U.S., Russia, Europe, China and Japan that have launched similar missions.

Aims & Objectives

Chandrayaan- 1, the 523 kg spacecraft to the Moon, was launched on 22 October 2008 and was inserted into Lunar orbit on 12 November 2008. The Moon is about 3.8-lakh km from Earth. But the planets in the Solar System are too far from Earth. Our nearest planet Mars is at least 560-lakh km away.

So, a spacecraft would need years to reach Mars. This is what makes such an endeavour extremely tough. Work on the Mars Orbiter Mission is going on full steam. Science is only a secondary goal for this mission. The main objective of the mission is to develop the technologies required for designing, planning, and managing operations of an interplanetary mission.

Payloads

Mangalyaan, with a 1350 kg liftoff mass, will carry payloads with a total weight of 14.49 kg. The mass has been scaled down to less than 15 kg against 25 kg planned originally. The payload consists of five instruments:

- (a) Mars Exospheric Neutral Composition Analyzer (MENCA)
- (b) Methane Sensor for Mars [MSM]
- (c) Mars Colour Camera [MCC]
- (d) Probe for Infrared Spectroscopy for Mars [PRISM]
- (e) Lyman-Alpha Photometer [LAP]

The Mars Exospheric Neutral Composition Analyser [MENCA] weighs about 4 kg. It will study the Martian atmosphere. The Methane Sensor for Mars [MSM] weighs 3.59 kg. It is capable of scanning the entire Martian disc within six minutes while Mangalyaan orbits the red planet. Methane is known to be released by some microbes as part of their digestive process. Earlier missions to Mars had detected methane in the thin Martian atmosphere,

but the discovery is yet to be corroborated. The Mars Colour Camera has a mass of 1.4 kg. Another instrument Probe for Infrared Spectroscopy for Mars [PRISM] weighs 3.59 kg. It is a Thermal Infrared Spectrometer. It will be used to map the surface composition of Mars during the night.

Once in the Martian orbit, the satellite will start taking pictures of the red planet with the colour camera and infrared spectrometer. The fifth instrument Lyman-Alpha Photometer [LAP] weighs 1.5 kg. It will be sent to measure atomic hydrogen in the Martian atmosphere.

MAJOR GOALS OF MISSION MARS

- (a) To transfer the probe from Earth-centered orbit to heliocentric trajectory
- (b) To insert the probe finally into Martian orbit
- (c) To develop force models and algorithms for orbit and attitude computations and analyses
- (d) To navigate the probe from Earth to Mars in deep space using the Deep Space Network
- (e) To meet power, communications and payload operation requirements of the probe
- (f) To re-activate the temporary inactive sub-systems of the probe after a 10-month journey
- (g) To study Martian atmosphere and explore things not done previously by other countries
- (h) To know how and why the red planet lost water and carbon dioxide
- (i) To incorporate autonomous features to handle unforeseen situations
- (j) Above all, to successfully enter orbit of Mars regardless of any scientific data return

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