

Are we neglecting India's rich marine biodiversity? {Livemint , Biodiversity – Paper III}

A short visit to San Francisco got me thinking about the way we look at marine biodiversity in India. Along with the Golden Gate bridge and Alcatraz island, one of the most iconic attractions of this lovely coastal city is a handful of loud smelly creatures that have tourists enthralled on a daily basis.

On my jaunts around the city I found myself gravitating to Pier 39. Here, a colony of sea lions has made the edge of Fisherman's Wharf its home since 1989. The subject of much scientific study and research, no one is quite clear why the sea lions arrived in this particular area or why they continue to live here.

Shortly after an earthquake hit San Francisco back in 1989, the sea lions began taking up residence at the pier and forming a colony and soon they became part of the city's landscape.

Over the years, the city has learnt to celebrate its sea lions. And now there is an interpretation centre devoted to the sea lions right above the pier that educates children and adults about the difference between seals and sea lions, their relevance to marine biodiversity and the story of Pier 39. All this as you hear the loud lazy animals grunting and barking right below.

Of course the sea lions weren't always welcome guests. The boat owners were not too happy about having to avoid the sea lions in order to reach their boats. Ultimately, for the safety of the boat owners, it was decided to leave the dock to the sea lions. Boat owners who owned dock slips were relocated elsewhere in the Pier 39 marina.

The weight of the sea lions—running into thousands of pounds—caused the K-Dock area to submerge, become waterlogged and eventually fall apart. In an attempt to repair the dock, floats were built on which

the animals could rest, indicating just how the animals had won the hearts of the locals.

The Marine Mammal Center's biologists believe that the sea lions have chosen to inhabit Pier 39's dock because there's plenty of food nearby in the bay and the absence of natural predators keeps them safe. Also, the docks are easier to haul out on, more comfortable and more protected from storms than a rocky beach.

But the naturalists studying the sea lions have observed that in spite of the protective environment, the number of animals visiting this part of the Bay area has declined; it is speculated that the impact of climate change could be disrupting their natural migratory cycles. Along with this, plastic in the oceans is another big threat; quite often, sea lions get entangled in packing nets or fish nets and need to be rescued.

Not far from the sea lion centre is the San Francisco Aquarium Of The Bay with its collection of all the local marine wildlife on display. With a touch pool for kids and a walk-through where you can experience leopard sharks swimming above your head, the aquarium makes you look at the marine world in childlike wonder. The centres play an important role in educating people about the local biodiversity and the need to conserve them.

As I walked around the Bay area, I realized there is so little we know about marine diversity back in India. In fact, there are very few conservation education centres that celebrate or educate us about life in the oceans. This, in spite of the fact that we have over 7,000km of coastline and 12,000 species spread across different taxa from crustaceans to birds to reptiles and mammals.

Two incidents that happened in the past one month indicate just how deep our ignorance of the marine world runs. In January, as many as 90 short-finned pilot whales were washed ashore, on the coast of Tuticorin in Tamil Nadu. While some attempts were made to push the beached whales back into the water, eventually at least 45 succumbed. Scientists are still not clear about what exactly happened that caused these animals to die en masse. In another incident, a 30 feet-long whale got beached at Juhu, near Mumbai. While stranding of whales is not uncommon, mass beaching continues to baffle scientists even now.

The next crisis facing the natural world will be in our oceans and seas. According to a report released by the World Economic Forum in January 2016, there will be more plastic in the sea in 2050 than fish. Already fishermen across India report a decline in catches—both in terms of quality and quantity—which should be a cause for concern.

In India, while our conservation policies are geared towards terrestrial biodiversity, there are many marine species that are not protected. And the crisis facing our seas will affect not just tiny creatures, but thousands of fishermen who live off it. I left California with a love for sea lions and a firm resolution to get to know the marine biodiversity back in my own country a bit better.

Bahar Dutt is a conservation biologist and author of Green Wars: Dispatches from a Vanishing World.

Source: xaam.in

Anatomy of the revenue deficit {Business Standard, Fiscal Policy – Paper III}

Many economists including this writer have been advocating strict adherence to the path of fiscal consolidation. I am not a fiscal hawk but I join with the hawks in the Indian context. The FRBM target has been relaxed far too many times in India's recent history for any plausible explanation for another relaxation to carry any credibility in the domestic and international financial markets. Further, the ostensible reason for relaxing the FRBM target, to increase public investment, does not hold. For 35 years now, the central government borrows to consume, not to invest.

The rationale for this is just common sense glorified as what economists call the "golden rule". Consumption must not be financed through borrowing.

It is for this simple reason that we discourage our children from borrowing money for an ice-cream but are willing to borrow to invest in a house.

Investment generates economic returns that ultimately allow the government to increase the size of its consumption expenditure. Borrowing for consumption does not do so and adds to the interest burden on the government. The golden rule means that the government consumption expenditure should be financed through taxation, unless there are rare and exceptional circumstances to deviate from this norm. Since the enactment of the FRBM legislation, the states as a whole (rich and poor; big and small) have been adhering to this rule.

With the Centre, this has not been the case since 1981; the FRBM legislation has not worked for the Centre. The revenue/fiscal deficit ratio has increased from 4.5 per cent in 1981-82 to 41.7 per cent in 1990-91, to 71.6 per cent in 2001-02, and to 71.8 per cent in 2015-16. So, consumption increasingly has been the driver of central government borrowing, and not investment.

The anatomy of this consumption is worthy of examination. Total revenue expenditure in FY13 was Rs 12,43,509 crore. Interest payments accounted for 25.2 per cent of total revenue expenditure. This (or at least 70 per cent of it) is a consequence of 35 years of borrowing to consume, a committed legacy. No finance minister can reduce this interest burden without running a significant fiscal surplus which is simply untenable for a developing economy. Some reduction in fiscal burden can occur if the interest rate on government debt falls but the government already borrows pre-emptively at a lower rate than others.

Subsidies accounted for Rs 2,57,071 crore in FY13 or 20.7 per cent of total revenue expenditure. Here, there is substantial room for expenditure reduction but the political economy of subsidies is a story that has oft been repeated and I shall not dwell on that here. Suffice to say that even a 50 per cent cut in subsidies in FY13 would have resulted in reduction of the revenue deficit by approximately 1.2 per cent of GDP, still leaving the government with a revenue deficit of 2.4 per cent of GDP. So this is not enough.

The third item of consumption is the pay and allowances provided to central government personnel. According to the 7th CPC report, total expenditure on them amounted to Rs 1,92,580 crore or 15.5 per cent of total revenue expenditure in FY13. By international standards, this is not large but given the notorious optics of bureaucrats idling in offices, could an axe be taken to this number?

Out of total pay and allowances expenditure, Rs 55,038 crore is spent on the railways. This amount is irrelevant for the revenue deficit since the railways has its own budget and is expected to cover its own expenditure from revenue generated (called the operating ratio). The ratio is close to 0.9 which implies it covers the railways covers its current expenditures

from its own revenues. So is the remaining Rs 1,37,542 crore, the amount spent on bureaucrats in FY13? No. Our expenditure on defence personnel amounts to Rs 75,869 crore. Presumably, this is a sacred cow. There appears to be a national consensus that our soldiers, sailors and airmen cannot be dispensed with.

That leaves us with Rs 61,673 crore. From this we must also deduct the amount spent on paramilitary forces like BSF, CRPF, CISF and SSB. These forces have expanded hugely since the 1980s and have grown from 3.25 lakh in 1984 to 9.72 lakh personnel in 2014. This is the price we pay for a disturbed internal security situation whose causes are too profound to dwell on here. Nevertheless, the two pertinent takeaways are: (a) the causes of this explosion in the recruitment of police forces over 30 years are clearly structural and there is little fiscal room here to manoeuvre; (b) as law and order is the basic function of a government there are few shiftless bureaucrats to be sacked.

The anatomy of the revenue deficit points to an inexorable structural reality; the central government is borrowing to consume and the consequences of this have been structurally weakening its fiscal health over the past 35 years. High outgoes on interest on debt is the price we pay today. Cutting subsidies would help, but not solve, the problem. The expenditure on government personnel is directed at the most basic function that a state has to perform, i.e. law and order. So the reasons for poor and deteriorating fiscal health of the union government are structural in nature and not amenable to fiscal medicine alone. Hence, in the absence of structural reforms, there is no short-term option but to persist with fiscal consolidation.

Source: xaam.in

Protecting India's trade interest {Trade – Paper III}

Only a cohesive trade policy approach on the international and domestic front will help the country mitigate projected losses from the Trans-Pacific Partnership agreement



The Trans-Pacific Partnership agreement (TPP) has been signed in Auckland on February 4 by Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the U.S. and Vietnam. Even as it is touted as the world's biggest trade deal to date, with signatory countries accounting for more than 50 per cent of global GDP, the TPP still has a long-drawn ratification process ahead of it. Signing of the agreement provides an opportune moment for India, which is not part of the TPP, to take stock and formulate its response to the trade challenges it now faces on both international and domestic fronts.

Discussing new issues

The TPP contains detailed obligations on so-called new issues such as labour, investment, environment, e-commerce, competition and government procurement. These issues are not covered under the World Trade Organisation's (WTO) multilateral umbrella. However, as the recent Nairobi Ministerial Declaration stated, "some" members want to explore and discuss new issues and architecture at the WTO. There is an increased likelihood of the U.S. pushing the TPP as the negotiating template for new issues at the WTO, since it better reflects the interests of its own domestic lobbies. As new issues are not likely to be in India's overall interest, the country must firmly resist such attempts. But this may only be accomplished with a high degree of preparedness and smart coalition-building with like-minded allies.

India also needs to closely watch the regulatory regimes in TPP countries, ensuring that these countries do not violate their WTO commitments in the process of implementing the TPP. The WTO does allow a member to deviate from its obligations with respect to a free trade area; however, such a deviation is not unqualified. If a TPP country restricts the market access for non-TPP members such as India on account of higher labour standards, a potential violation of WTO provisions may arise, which India should not shy away from pursuing using the WTO's dispute settlement mechanism. India should actively seek disciplines on

private standards at the WTO to restrict their proliferation. The TPP attempts to regulate and, according to some experts, legitimises this regime. A number of studies have predicted that the TPP will lead to proliferation of private standards. However, the fact is that such standards have existed as a parallel regulatory regime in international trade for some time now. For instance, in 2006, the Sialkot sports goods manufacturing cluster in Pakistan came close to closure when Nike decided to stop sourcing footballs made in the area, on account of violation of its labour standards that prohibited child labour. Despite significantly impacting international trade, these standards have escaped regulation under the WTO. This is because they do not originate from the 'state' but from private bodies. Disciplining such private standards at the WTO is much needed and is something that should be urgently pursued.

What India must do

Impelled by the looming onset of the TPP, India should conclude, on a priority basis, its ongoing free trade negotiations. These include the India-EU Bilateral Trade and Investment Agreement and the mega Regional Comprehensive Economic Partnership with the Association of Southeast Asian Nations, China and others. Benefits from these agreements will help mitigate some of the export losses that India may face in leather goods, textile, and plastics on account of trade diversion due to TPP. Aiming to diversify export destinations to hitherto untapped markets like Latin America and Africa would also help.

India also needs to identify its trade interest areas and propose alternative negotiating templates. One such area is biopiracy, protection of traditional knowledge, and the link between the WTO's Trade-Related Aspects of Intellectual Property Rights agreement and the Convention on Biological Diversity. There have been several instances of biopiracy in the past, of Indian traditional knowledge, such as the patenting of the wound-healing properties of *haldi* (turmeric). Being among the 12 mega biodiversity-rich countries, India

needs to bring this issue to the negotiating table in its own free trade agreements.

On the domestic front, India should accelerate the process of making its products more cost-competitive. There is no denying that India's infrastructural deficiency, including port congestion and poor road connectivity, is one of the main hurdles in attaining this cost competitiveness. Addressing these will have the dual effect of not only making India's exports cost-competitive, but will also make them more attractive for international lead firms to integrate India in global value chains.

The government should launch a comprehensive initiative to enable Indian exporters to not only comply with standards prevalent in the importing market, but also demonstrate the compliance through appropriate conformity-assessment procedures. India should resist any attempt to converge its domestic public standards with the dominant private standards in TPP countries. If India's public standards are harmonised with foreign standards, they will be equally applicable to domestic and export sales on account of the 'national treatment' principle of the WTO which prohibits less favourable treatment to imported products. The harmonised standards may result in most producers not only being excluded from export markets, but also being edged out of the domestic market, undermining the Make in India initiative in the process. By not being part of the TPP, India will certainly incur losses on account of trade diversion. Yet, joining the TPP is not an option for the country. This would entail very heavy costs. Medicine prices, for instance, would see steep increases. That is precisely why mitigating such projected losses from the TPP should be a government imperative. This can only be achieved by a cohesive trade policy approach on the international as well as domestic front, aimed at protecting and promoting India's trade interests.

(Shailja Singh is an assistant professor at the Centre for WTO Studies, Indian Institute of Foreign Trade, New Delhi.)

Only a cohesive trade policy approach on

the international and domestic front will help the country mitigate projected losses from the TPP

Source: xaam.in

Moving in for the kill {Science & Technology – Mosquito Eradication – Paper III}

Two new approaches for mosquito eradication show promise in the war against Zika and dengue – genetic modification leading to premature death and the introduction of a lethal bacterial strain

An estimated 390 million dengue infections occurring each year across 150-odd countries is proof that the current mosquito control measures are grossly inadequate to keep the *Aedes* species, the vector that transmits dengue, chikungunya and Zika, under check. In Brazil, more than 1.5 million people were affected by Zika last year. That the virus has now spread to more than 20 countries in Latin America and the Caribbean only serves to augment the failure on the *Aedes* front.

In spite of several challenges, insecticide-treated bed nets have helped in cutting down the number of malaria cases in Africa. But they are of little use in keeping the *Aedes* mosquito species, which are aggressive daytime biters, at bay. Urbanisation has allowed the *Aedes aegypti* mosquitoes, found in tropical and sub-tropical countries, to breed in diverse waterbodies and even indoors in nearly any sort of water-filled container.

A major constraint in the fight against *Aedes aegypti* has been the vector's resistance to widely used insecticides such as organophosphates and pyrethroids. Developing an effective vaccine against Zika may take years but there's hope in the case of dengue: Sanofi has recently launched the first-ever vaccine against it. It, however, has several limitations as of now, including lower efficacy against the DENV-2 serotype (dengue has four serotypes in all) that is prevalent in India and vaccine-generated antibodies that facilitate the entry of the dengue virus into human cells. Even when a cheap, safe and effective vaccine against dengue becomes available, the compulsion to reduce the mosquito population will remain a top priority as *A. aegypti* transmits Zika and chikungunya as well.

Novel strategies

Two novel strategies have shown promise in recent years. One involves the use of

genetically modified male *Aedes aegypti* mosquitoes that carry a dominant lethal gene. The gene is passed down to offspring when they mate with wild female mosquitoes that are not genetically altered. The lethal gene in the offspring produces a protein that stops their cells from functioning normally by producing more of itself and prevents other genes essential for survival from turning on. This prevents the mosquito larvae from growing properly and causes them to die before adulthood, essentially breaking the insect's life cycle. The dominant lethal gene is kept under check while breeding in labs by using tetracycline drug. But due to the absence of tetracycline in sufficient quantities in nature, the larvae end up dying due to overproduction of the protein. As male mosquitoes do not bite humans, the release of genetically modified males will not increase the risk of dengue.

The biggest advantage of using this technique is its species-specificity; mutant *Aedes aegypti* released into the wild will not breed with another species of *Aedes*. Also, field studies carried out in West Panama have shown that short-term suppression of *Aedes aegypti* population did not lead to abundance of *Aedes albopictus* (Asian tiger mosquito), notes a paper published in September 2015 in the journal *Pest Management Science*. But more data may be needed to confirm this.

Since the modified insects disperse and actively seek wild female unaltered mosquitoes for mating, targeting the difficult-to-reach pest populations like *Aedes aegypti* becomes easier and more efficient than conventional control measures.

To be effective, genetically altered male mosquitoes need to be released in large quantities at regular intervals so they compete with the wild normal male insects for mating. Since the offspring do not live long enough to reproduce and the release can be stopped at any time, the Release of Insects carrying Dominant Lethal genes (RIDL) is a "self-limiting approach (the genetic modifications are not perpetuated in wild populations)", notes a piece in *The Lancet* (February 1, 2016).

The first open field trial carried out in 2010 in the Caribbean island of Grand Cayman without much publicity by Oxitec, a British company founded and part-owned by the University of Oxford, was reported to be a success. An 80 per cent reduction in adult dengue-causing mosquitoes was registered in a 16-hectare plot.

The key performance parameters for genetically modified male mosquitoes released into the wild are longevity, dispersal capacity and mating competitiveness. According to an August 2012 paper in *PLOS ONE*, a field study done between 2010 and 2011 in an uninhabited forested area of Pahang, Malaysia showed that longevity of released males was similar to the wild ones but the mean distance travelled by the genetically sterile males was lower (52 m against 100 m for wild mosquitoes).

Similar trials have been carried out in several countries including Brazil (Itaberaba suburb of the city of Juazeiro, Bahia) with great success. The release of sterile male mosquitoes led to 80-95 per cent suppression of the target wild population in Brazil (*PLOS Neglected Tropical Diseases*, July 2015).

Radiation too can produce sterile males and has been successfully used for controlling certain agricultural pests. But in the case of mosquitoes, several field trials carried out using radiation- or chemically-sterilised mosquitoes have been hit by "poor performance of irradiated mosquitoes".

Blocking dengue transmission

Another novel approach successfully tested in the northern Australian city of Cairns is to block dengue transmission to humans by greatly reducing the replication of the dengue virus and its spread inside the body of the mosquito.

This is achieved by introducing a life-shortening Wolbachia (a diverse group of intracellular bacteria) bacteria strain into male and female *Aedes aegypti* mosquitoes. While embryos from uninfected wild females fertilised by sperm from Wolbachia-infected males fail to develop, embryos from infected females fertilised by infected or uninfected wild males survive. Since Wolbachia is maternally inherited, infected females pass on the bacteria to offspring immaterial of which male mosquito it mated with. As a result, when male and female mosquitoes carrying Wolbachia are released spatially apart to breed with wild mosquitoes in an area, the bacteria spreads rapidly in the mosquito population there.

Unlike in the case of mosquitoes carrying the dominant lethal gene, the release of even a single female mosquito infected with Wolbachia bacteria could “potentially lead to the alien Wolbachia spreading in the target population”, warns a paper published in June 2013 in the journal *Pathogens and Global Health* . “This is likely to be seen as an undesirable outcome and therefore a significant risk, unless species-wide invasion is the intent of the release.” The release of Wolbachia-infected *Aedes aegypti* mosquitoes is “ongoing in dengue-endemic countries such as Indonesia, Vietnam and Brazil”, *The Lancet* paper notes.

As the field trials showed, the ability of wild *Aedes aegypti* 's ability to spread dengue virus can be greatly reduced, if not eliminated, as it tends to be a population-replacement approach. Though Wolbachia's ability to cut Zika transmission is not known, studies have indicated that it can be effective against chikungunya, yellow fever and West Nile disease transmitted by the *Aedes aegypti* mosquito.

None of these novel approaches should be looked upon as silver bullets. Only an integrated pest management programme can help reduce the mosquito population and sustain the gains. Even a less effective vaccine can then become a great complementary tool.

prasad.ravindranath@thehindu.co.in

A major constraint in the fight against Aedes aegypti has been the vector's resistance to widely used insecticides

Source: xaam.in

Going against the grain {Rural Economy – Paper II & III}

Recent reports say India has become the world's fastest-growing economy in terms of GDP growth, overtaking China. While this may be the case, we must pause and reflect over what this means for the 800 million-plus population that lives and

works in our rural areas. The picture there is a lot less spectacular. Between 2003 and 2012, there was a clear turnaround in our agricultural performance. But the rate of growth in agriculture and allied activities is down from about 4 per cent per annum in the 11th Plan period to just 1.7 per cent in the first three years of the 12th Plan (2012-15). Over 300,000 farmers have committed suicide in the last decade, and in Maharashtra alone, over 2,000 such cases have been reported last year. Worse, India is currently reeling under the impact of an unprecedented drought. For the second year in succession, rainfall in the monsoon season has been less than normal; 302 districts in the country have been declared drought-hit. Since agriculture is the source of livelihood for millions in rural India, droughts push the already precarious lives of smallholder farmers and agricultural labourers to the brink, leading to massive rural distress.

The changing rural economy

The World Bank's World Development Report 2008 shows that agricultural growth is at least twice as effective in reducing poverty compared to growth originating in non-agricultural sectors. In India, too, 80 per cent of the people officially counted as poor lived in rural India in 2011-12. This means that for making a significant dent in poverty, rural incomes have to grow at a faster rate. The gap between urban and rural consumption levels has increased over the years. Recent studies have shown that despite the spurt in rural incomes between 2005 and 2012 caused by a rise in commodity prices and favourable terms of trade for agriculture, the level of non-farm incomes is at least three times that of farm incomes even today.

The rural economy in its current juncture is a lot less "agricultural" than it used to be earlier. With the fall in the average size of landholding, over 90 per cent of farmers are now in the small and marginal category and they cultivate over 50 per cent of the cropped area. Smallholder farmers are increasingly forced to combine non-farm work with work on their own land. Data from the 68th round of the National Sample Survey (2011-12) show that about 36 million workers have shifted from agriculture to non-agricultural sectors between 2004-05 and 2011-12, meaning that a major part of their income comes from work outside agriculture. On account of this inter-sectoral movement, the share of agriculture in the total workforce has fallen below the 50 per cent mark for the first time after Independence. While this number has been contested, the fact remains that sectors like rural construction are now the sites employing substantial numbers of workers. Given the poor working conditions in these sectors and the overall decline in quality of employment in the economy, this is likely to be the result of a swapping of low-income farm work for low-quality non-farm work, as many observers point out.

Hence, the huge challenge of employment generation needs to be addressed. As the Economic Survey 2014-15 shows, regardless of the data source used, employment growth (1.40 per cent) has lagged behind growth in the labour force (2.23 per cent) between 2001 and 2011. Clearly, employment elasticity of growth, showing the effectiveness of the economic system in generating employment, seems to have declined over time. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has provided relief employment to around 5 crore rural households per year over the last decade. However, since 2012, both the number of households covered and the number of person days of employment generated under MGNREGA in the country as a whole has undergone a steep decline.

Public investment the key

For rural India to be vibrant, the way forward seems to be to simultaneously address the twin challenges of reviving the dynamism of the farm sector by building its climate resilience on the one hand and creation of quality employment in non-farm segments of the rural economy on the other.

Public investment holds the key to addressing the long-term structural constraints of the rural economy. Official land use statistics show that 55 per cent of cultivated area still has no access to irrigation. Variations in the pattern of seasonal rainfall themselves create extreme vulnerability in this rainfed segment of Indian agriculture. The experience of watershed projects over the last three decades has shown that local harvesting of monsoon run-off can be a good drought-mitigating mechanism as it provides supplemental irrigation to crops at crucial periods of plant growth. Investments under MGNREGA and watershed programmes need to be converged in this overall framework of drought-proofing rainfed agriculture. Since rainfed agriculture produces about 40 per cent of our foodgrain and a major share of pulses, millets and oilseeds, investments are urgently required from the point of view of food security. Soil is another critical area where investments are needed. Due to poor organic matter incorporation, organic carbon in soil is below the required level in most parts of India. Indiscriminate use of chemical fertilizers has further eroded soil health. Many methods of soil enrichment, including by recycling organic matter and converting "waste to wealth", have been demonstrated on the ground by scientists as well as farmers. The task at hand is to scale up these for greater farmer uptake. This would also mean a reframing of the current fertilizer subsidy regime, which is heavily biased in favour of synthetic chemical fertilizers. Though there is a growing awareness about the harmful effects of chemical pesticides on environment and human beings, the fact still remains that chemical pesticide use has gone up over the years. The pesticides used in India are more harmful than those in many other parts of the world. There is an urgent need to promote alternative ways of pest management, such as non-pesticidal management (NPM) practices to eventually phase out the use of synthetic pesticides and make agriculture chemical-free.

Promoting crop diversity

Crop diversification is another big challenge. Even with changing consumption patterns, pulses are the main source of protein for the poor. They have a crucial place in the country's food security architecture. Millets impart greater resilience to the cropping systems against climate risk in traditional millet-growing areas. Minimum Support Prices (MSPs) have been beyond the reach of most of the farmers growing pulses or millets, and there has been no system of public procurement of these crops. The recent experience of States like Madhya Pradesh is useful in organising decentralised procurement of pulses and millets in those rainfed States where they constitute a major share of the cropped area. Such procurement of local foodgrain, feeding into programmes providing supplementary nutrition like the Mid Day Meal Scheme (MDMS) and Integrated Child Development Services (ICDS) Scheme, can be effective in reducing pervasive undernutrition among children, adolescent girls and pregnant women in India.

Agricultural research plays a crucial role in promoting diversified cropping systems. Currently, the public expenditure on agricultural research is only 0.7 per cent of the agricultural GDP. There is a strong case for raising this by at least three to four times. While doing so, attention must be paid to include crops like pulses and millets and attempt to develop climate-resilient cropping systems. Scientists and extension workers of the public-funded agricultural extension system have played a huge role in the agricultural transformation of the country. However, this system is virtually defunct in many parts of the country, especially in the rainfed tracts. Concentrated efforts are required to revive the agricultural extension system and build its capacities by both human resource as well as technical know-how. Organisations like the Agricultural Technology Management Agency (ATMA) and Krishi Vigyan Kendras need to be energised to become active agents of change in rural areas.

There is also the major challenge of employment generation to be addressed. Projecting the current trends of employment growth to the future, estimates show that the number of non-farm jobs to be created has to be at least thrice as much as the current growth rate of 5-6 million jobs per year. A significant number of these jobs will have to be created in the rural non-farm sector. Hence, we need to identify sectors within the rural economy which have high growth and employment generation potential and support them through a carefully worked out policy package. Sectors like agro-processing and value addition to agricultural produce offer huge scope for local employment and for greater control by the local producers over the value chain. Public investment in rural infrastructure is known to leverage substantial private investment and generate significant local employment multipliers. Available evidence shows that even as the overall rate of women's labour force participation has declined, there has been high labour force participation of women from poorer households, especially in times of increasing agrarian distress. This underscores the need to revive MGNREGA, which has a proven track record of providing relief employment to a large number of rural women.

(P.S. Vijayshankar is founder-member, Samaj Pragati Sahayog, an NGO based in Madhya Pradesh.)

Source: xaam.in

Big ticket disinvestment likely {Disinvestment – Paper III}

BHEL, ONGC and IOC may witness strategic sale

WHAT'S COMING ON FEBRUARY 29

<ul style="list-style-type: none">• Hike in pay and pensions from January 1, 2016 in line with 7th Central Pay Commission recommendations• No further deviation from the committed fiscal deficit path	<ul style="list-style-type: none">• A new centrally-sponsored scheme for irrigation• A roadmap for disinvestment• Mega strategic sales in oil PSUs as part of India's energy security plan• Changes in the policy for repatriation of returns by foreign investors in some sectors
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ARUN JAITLEY,
Finance minister

The big thrust areas of Union Budget 2016-17, which is Finance Minister Arun Jaitley's most closely watched budget, will be the agriculture and transport sectors and big-ticket disinvestment, including strategic sales in high-value companies such as Bharat Heavy Electricals Limited (BHEL), and oil and defence public sector units (PSUs) such as Oil and Natural Gas Corporation (ONGC), Indian Oil Corporation (IOC), Hindustan Petroleum Corporation (HPCL), Bharat Petroleum Corporation (BPCL), Hindustan Aeronautics Limited (HAL) and Bharat Earth Movers Ltd (BEML).

Mr. Jaitley will announce in his budget speech a new centrally sponsored scheme for irrigation.

On the expenditure side, the big outgo will be on account of the implementation of the 7th Central Pay Commission recommendations for pay and pension hikes with effect from January 1 this year.

The government has decided, an official source told *The Hindu*, to announce hikes slightly more generous than the Commission's recommendations. The payouts that will begin from April 1 will include arrears for three months. More than Rs. 1 lakh crore has been budgeted under the head.

Although this payout has turned out to be the biggest challenge for the Finance Minister in meeting the fiscal deficit target, the source said "full effort is [on] to ensure there are no further pauses in the committed fiscal consolidation targets."

The Finance Ministry earlier sent its budget calculations including proposals related to the fiscal deficit for approval to the Prime Minister, the source said. Mr. Jaitley will present the budget in Parliament on February 29. To meet the fiscal deficit target, the government will rely on proceeds from disinvestment for which the budget will set ambitious targets.

Source: xaam.in

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