(1) Power discoms are in debt of more than 80000 Cr, even after UDAY scheme.

(1)

Issues with Power discoms

1) operational inefficiency
e.g high T&D losses

2) High cost of Procurement & low cost of sellings
e.g due to Political opportunism and subsidies

3) Financial inefficiency
e.g low ~~cost~~ revenue realisation, low debt servicing.

4) Poor investment in infrastructure

5) Poor competition and low bench marking due to weak accountability.

6) High cross subsidisation and lack of support from state budgets.

7) Poor technology uptake
e.g. online billing is not there in some states.

Benefits of Privatising discoms

1) More investment
2) Govt can move away from budgetary support
3) Better technology can lead to more technical, operational & financial efficiency e.g. Time of the day Pricing.
4) Early incorporation of smart grid
5) Promoting Ease of doing Business & more competition

Challenges

1) High cost for consumer
2) Private player may focus less on poor consumers.
3) Issues with agriculture esp in states like Punjab.
4) People may commit violence against private sector employees if quality of electricity is poor.

Way Forward

Reforms in case public DISCOMs can be reformed. Separation of content & carriage and privatising selectively

(2) Smart agriculture refers to use of technology in agriculture (3)

Uses in
- ↳ weather information
- ↳ Soil information
- ↳ controlling & irrigation automatically
- ↳ Rational use of inputs
- ↳ Better market Pricing information.

It can improve farm productivity via

1) Optimising inputs e.g. fertiliser / Pesticides.
2) Reducing cost e.g. water cost
3) Achieve better crop selection based on predictive price algorithm e.g. microsoft is developing this for A.P.
4) Better price realisation
5) Low losses due to pests
6) Allowing information access to credible risk management firms, so insurance cost will reduce.

2) Promoting integrated farming in better way.

Challenges

- Cost
- Literacy of farmers
- Less extension service availability to farmers
- Less awareness

There is a need of National mission on Smart Agriculture which can subsume NICRA. and National Mission on Sustainable Agriculture. Some recent schemes like FASAL, BHUVAN & NADAM can be taken as its foundation.

Emphasis on quantity refers to measurable amount (e.g. GDP growth), while quality refers to normative aspects.

Moving from quantity to quality

1) From GDP growth rate to Happiness as inclusiveness requires elimination of inequality

2) Emphasis on environmental quality e.g. Delhi's per capita income is high but smog pollution reduces quality of life.

3) Measuring regional imbalances e.g. emphasis on vulnerable groups like tribals

4) Improving GDP by emphasising economic empowerment of women.

5) Providing employment opportunities by emphasis on labor intensive sector, cottage industries & MSMEs

6) Promoting values of harmony, tolerance to promote peace apart from supporting material values

7) Focussing on quality of manufactured components as much as on quantity (e.g Zero Defect Zero Effect)

8) Promoting Urbanisation while focussing on slum rehabilitation and sustain-ability

This is the way forward in realising true vision of Gandhiji's Talisman.

4) Atmanirbhar Bharat aims towards making India self reliant based on 5 Pillars
- → Economy
- → Infrastructure
- → System
- → Demography
- → Demand

Core areas crucial in export Promotion

India has 1.7% share in world manufacturing Export which requires increase.

1) Infrastructure investment e.g. Roads, Railways to reduce logistics cost (which is 14%)

2) Easing regulatory burden & simplifying processes e.g custom clearance.

3) Incentivisation to exports e.g. cheaper credit via Exim Bank.

4) Strengthening SEZ Ecosystem via Baba Kalyani report recommendations e.g. reducing tax, renaming these as EEE etc

5) Standardisation of exports e.g. via international standards.

6) Reconsidering existing FTAs based on contemporary needs (Economic Survey 2020)

7) Easing of land & labor laws to promote productivity

8) Focusing on niche areas e.g agri export, electronics export

9) Making India part of Global value chains by promoting ease of doing business

Recently done reforms like lowering tax rate, Promoting VGF in PPPin infra, IBC can go a long way in this direction

(5) Arsenic pollution is becoming Prominent in Northern Alluvial Plains esp. along Ganga & its tributaries (9)

Sources

1) Industrial discharge which is untreated
2) Untreated sewerage & leaching from hazardous waste & e-waste
3) High groundwater extraction which promotes leaching from Arsenic rocks
4) Waste dumping into the rivers from urban & industrial regions
5) Leaching from Ash of Thermal Plants

Consequences

1) Human health & animal health → acts as Carcinogen & can lead to renal failure
2) Biomagnification in crops.

3) Cause genetic defects in plants

4) Pollution of ground water can remain there for long term

5) Impacts marine biota e.g deaths of fishes.

Measures to tackle it

a) Preventive measure
   - ↳ Aquifer management & low groundwater use
   - ↳ Treating waste discharge from industries
   - ↳ Sewage Treatment Plant capacity enhancement
   - ↳ Use of hydrophytic plants which remove Arsenic from water

Creative measures

- ↳ R&D on new technology to filter Arsenic from water
- ↳ Afforestation along river banks

This can lead to sustainable management of water resources

Green Term Ahead Market refers to selling of Renewable Energy (RE) in short term market without having Long term PPAs.

It can reinvogarate RE sector

For sellers

- ↳ More scope of selling RE
- ↳ Better Price discovery based on demand
- ↳ More investment in RE to capture merchant trading
- ↳ No fear of cancellation of PPAs (e.g. A.P. case)
- ↳ Timely payment to RE developers (following T+2 regime)
- ↳ Can allow better integration of RE into grid thereby removing variability.

For Buyers

↳ Availability of electricity when there is need

↳ No long term commitment

↳ Easy fulfillment of statutory RE purchase compliances

↳ Can look for better prices without getting tied to single seller.

For electricity sector

↳ Can Promote time of day pricing.

↳ Faster roll out of Smart grid

↳ can lead to more "greenness" of sector

Challenges

↳ Less awareness

↳ Still at infancy, so performance can't be predicted accurately

This can be a game changing moment for RE sector in India.

(7) Use of technology like GIS & Remote sensing can be beneficial at every level of disaster management

In Prevention, Mitigation & Preparation

↳ For hazard & risk mapping e.g. Landslide prone areas

↳ Better urban & rural land use to avert disasters e.g. flood plain zoning started in Bihar

↳ Geo tagging of essential institutions on map e.g. health facilities in National Digital Health Mission

↳ Mapping the vulnerable population to which help should be extended preemptly.

In Response/ Recovery & Rehabilitation

↳ Facebook's Safety check feature during Kedarnath floods.

↳ Faster assessment of losses via GIS eg. Kisan Fasal Yojana uses space tech for loss assessment.

↳ Identifying victims who are trapped in inassessible regions e.g drones were used in Assam floods

↳ Use of satellite based phones in areas of disasters

There are concerns related to authenticity, accuracy & reliability of information. But incorporation of Data Analytics, AI along with GIS/Remote sensing can make responses prompt and more accurate

(8) Inventors of CRISPR technique recently got Nobel Price in Medicine, 2020. (15)

CRISPR for genome editing

↳ Can cut a part of genome of organism

↳ Can replace it with part of genome from other organism

It has revolutionised genome editing technique as

↳ It is less costly

↳ Much faster

↳ More accuracy & precise editing can be done

↳ Can be applied on whole set of organisms

↳ Rejection rates are lesser.

Application in various areas

1) Health care sector e.g. creating new biological vaccines as in insulin

2) Agri sector → High quality Herbicide Tolerant GM crops for high productivity.

3) Space research → Creating crops that can sustain in difficult environment. Space is doing this for Mars settlement Project

4) Resolution of various rare diseases and genetic defects

Challenges

↳ Creating modified babies e.g done by a Chinese researcher

↳ Tinkering with nature can have serious & undesirable effects e.g Anti biotic resistance diseases

↳ Lack of global SOP

↳ No global regulations for unethical conduct

↳ Domestic legislative gaps in genome editing.

↳ Can be misused to create biological weapons

Technology is as good as ethical conduct of researcher. There is need for SOPs to use CRISPR to curb its misuse.

(9) FATF is a multilateral body of 37 countries. (Also includes EU & GCC)

Mandate
- → curbing money laundering and
- curbing → Terror Financing

Role of FATF in Money laundering

1) Releasing standards for harmonisation of information sharing amongst countries

2) India modified Prevention of money laundering act to confirm FATF recommendations e.g. Corresponding laws was included

3) Regulations to make Civil society organisations more accountable.

4) Promotion of Sanctioning jurisdiction which don't comply with FATF standards.

5) Grey listing and Black listing of jurisdictions which can impact their economic prospects.

6) Promoting collaboration of intelligence agencies of different countries e.g FIU-IND & ED of India with others

7) Putting restrictions on Tax havens to avoid treaty shopping.

8) Putting restrictions on financing of terrorism, which can be a motive to launder money.

Challenges

↳ Geopolitics → e.g. Pakistan is still not Black listed

↳ ~~Att~~ Less no. of member countries

↳ Sanctions are not mandatory & depend upon individual country

Still, role of FATF is comm-endable and can be ~~self~~ enhanced by increasing membership and strong sanctioning regime against erring jurisdictions.

National security architecture include Planning, information gathering & execution part.

Planning side Reforms

1) Constitution of Defence Planning Committee headed by NSA
2) Creating Post of Chief of Defence Staff (Naresh Chandra Committee recommend)
3) Indian Maritime Security Strategy (3 circle strategy)
4) Devolution of Powers to lower functionaries e.g Joint secretaries & Vice-Chief of staffs

Intelligence gathering

1) Multi Agence Centre
2) NATGRID
3) National Cyber Crime Coordination Centre, IMAC, Information Fusion Centre

Execution Part

1) Mission based Deployment of Navy.
2) Integrated Battle groups

3) Improved tooth to tail ratio by implementing Shekatkar Committee recommendation

4) CIBMS, Bold-QIT & Border security Grid (Madhukar Gupta Committee)

Impact of reforms

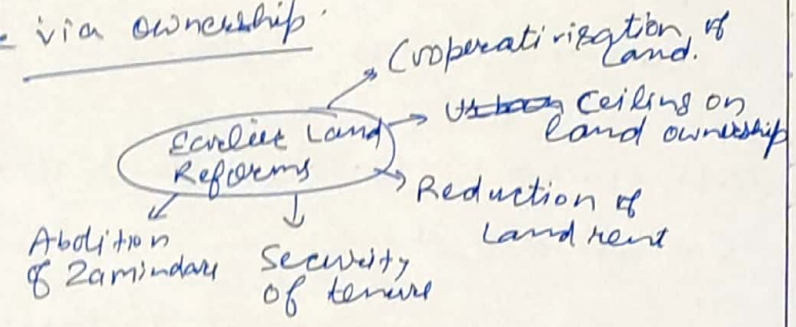
1) Better responsiveness to threats
2) More coordination among agencies
3) Quality of Actionable intelligence will improve.
4) Accuracy & predictability of response will improve
5) Cost reduction due to better management of resources.

Challenges

- Defence expenditure is less (1.5% of GDP)
- Need for strategic cooperation globally.
- Skill set in cyber security is lacking.

There is a need for White Paper on national security and National security Doctrine, along with increasing defence expenditure to 2.5% of GDP (Shekatkar Committee)

(1) Land reform is a process of providing land to agriculturedists who don't have it either via secured tenure or via ownership.



Key hurdles being faced now:

1) Land fragmentation due to increased population. Operational land holding is around 1ht now.

2) Opposition to forced cooperati-visation, as e.g. of China is not applicable now.

3) Opposition by land holders, as land consolidation is helpful in better mechanisation and improving agri productivity.

4) Less support by political parties as leftist parties are not in power regionally or in centre.

(2)

5) Lack of availability of land ownership data, although computerisation of land record is changing this issue.

Advantages that can be reaped via land reforms

1) Improving income to farmers as 48% of farmers own just 24% of total land.

2) Promote capital long term investment by tillers, if they have tenural security.

3) It will achieve goal of doubling income for farmers, due to easy access to credit & risk management, in lieu of ownership of land.

4) May lead to mutual cooperation amongst farmers in form of FPO or cooperatives.

5) Especially beneficial for Tribal people, who are getting alienated due to intrusion of

market forces.

Way Forward

1) Need to bring land tenancy and sub-letting legislations.

2) Incentives to farmers to promote cooperativization of activities e.g. FPOs.

This can result into bringing evergreen Revolution in agricultural arena.

Nutritional security refers to providing adequate nutrition apart from just focussing on calorie based food.

India needs to accelerated more significance to nutritional security than food security as

Various programs for food security are - there like

- PDS
- National Food Security Act
- ICDS for Children & Pregnent women
- mid day meal for children

But still nutritional outcomes are poor?

1) 38% of children are stunted
2) 20% of children are wasted
3) more than 50% of women in reproductive age are anaemic.
4) Condition is poorer in case of tribal & rural areas.

Some steps taken to promote nutritional security

→ POSHAN Abhiyaan

→ Setting minimum standards of nutrition in mid day meal

→ Providing coarse cereal & pulses via PDS.

→ Iron & Folic Acid supplements to adolescent girls

Framework that needs to be adopted for nutritional self Reliance

→ Promoting diversity in agri-culture. Increasing emphasis on pulses, coarse cereals etc

→ Multiple options to be made available in ICDS & Midday meal e.g. milk is provided in Haryana

→ Regular monitoring of nutritional status of children in schools/ Anganwadi and pregnant ladies.

→ Emphasis on preventive health-care, WASH strategies

→ Providing locally relevant food to tribals

→ Availability of clean drinking water e.g via Jal Jeevan mission

→ Concept of PDS mall of Andhra can be adopted nationally.

→ Dashboard of nutritional data to ensure accountability

→ Collaboration with global players, MNCs to work in direction of fortified food e.g. FT concept of FSSAI.

This will allow us to achieve our committment of SDG2 and DPSP Art 45 of nutritional security.

Gross Fixed capital investment are in the range of 25-26%. (Economic survey) which is lower than pre-2008 times

Private investment are key to move India into higher growth trajectory as :

1) It increases capital investment for long term gestation project

2) Creates employment opportunity as govt's ability to provide employment is limited.

3) Can promote skill development Prospects

4) Promoting Ease of Doing business by emphasis on infra building eg reducing logistics cost

5) Making India a part of Global value chain, thereby strengthening economic interlinkages & reducing risk.

6) Promote political stability

7) Reduced crime rate

8) Women empowerment by economic empowerment

Steps taken by govt to address fall in private investment

1) Lowering corporate tax rate e.g. 15% to manufacturing firms

2) Abolishing Dividend Distribution Tax

3) Easier availability of capital by Bank reforms, recapitalisation & special windows for the Startups, SMEs etc

4) Reforming provisions of SEZ Act e.g. offset can apply from purchase from SEZ.

5) Emphasis on infra building e.g. highways

6) Viability gap funding e.g. UDAN scheme.

7) Improving contract enforcement e.g. Commercial benches in High courts

8) Insolvency code for easier exit

9) Decriminalisation of various offences in ~~Cos~~ Companies Act

10) Sectoral reforms to promote private sector investment e.g. Coal sector

Way Forward

1) Adapting Kelkar committee recommendations in PPP.

2) Bringing direct Tax reforms via Arbind modi committee recommendation,

3) Improving EoDB via emphasis on land registration and contract enforcement reform

This can may India touch Atmanirbhar.

Regional balanced development requires a regional approach to development

Geographical diversity of India

- Himalayas in North & North east
- Vast Alluvial Plains
- Deccan Plateau with intra regional diversity
- Forested Areas (North east & Chattisgarh)
- Desert & Drought Prone regions of North West India

Development levels are varied

1) Per Capita income
2) Health indicators (MMR is 47 in Kerala, 238 in Assam)
3) Poverty levels are higher in eastern India.
4) Women empowerment is more in Southern India

Problem in single action Plan for whole country

1) Resource availability is different

2) Perception of people is different

3) Centralization is harmful in federal structure

4) Natural biodiversity & resilience levels are different e.g. Western Ghats are highly vulnerable to Red group industries

~~Need to~~

5) Alienation can happen amongst different groups e.g Tribal alienation

Need for targeted region specific action plans

1) Drought Prone area - Emphasis on water harvesting, Canal laying, livestock management

2) Tribal area Plan e.g. Sub Plan for Tribals in budget

3) North east Plan to Promote Sustainable infra development

4) Western ghat development Plan to Promote natural conservation and employment generation e.g. eco-tourism.

5) Hill area development Plans by emphasis on natural conservation, hazard management (Landslide) and employment generation

This can truely allow "Sabka saath, Sabka Vishwaas" and make India's development path more sustainable.

Barrier free trade is sine qua non for making India a single agricultural market.

Barrier free trade is critical as

↳ For farmers → Provides better Pricing, risk management, and new information for better Product; removing intermediaries

For consumer → more variety, lesser Prices, good quality

For FPO and Processing companies (Food) Good quality Products at lesser cost, generation of employment opportunities in non-agri sector, so reducing burden on agri land

Existing Bottlenecks

1) Legal bottlenecks like APMC act which prohibits selling products outside mandis

2) Technological issues like lack of understanding & penetration of e-NAM.

3) Logistical issues e.g. Poor Connectivity.

4) Infra issues e.g. lack of availability of food storage tanks & cold storage

5) Lack of dispute redressal mechanism

6) Weak availability of standards for sorting, grading etc.

Recent legislations

1) Essential Commodities Act
   - Freeing up storage quantity from govt. restrictions except in war, famine etc
   - Benefit to exporters

Can Lead to
- → More investment in storage infra.
- → Cheaper availability of infra to farmers.
- → Promotion of Negotiable Warehouse Receipt.

2) Farmer's Produce Trade & Commerce (Promotion & Facilitation) Act, 2020:

- Farmer can sell product outside mandi
- Can sell via e-platforms
- No fee to be charged by states

Benefit

- More marketing options available
- Reduced transaction cost
- Better Price discovery

3) Farmers Assurance of Price and Farm Services act

- Allows contract farming
- Will reduce input cost to farmers
- Better risk management
- Guaranteed price.
- Dispute redressal mechanism

Way Forward

need to address concerns of farmers group regarding MSP and promoting FPOs is way forward.

Floods impact 12.5% of total land in India (NIDM report)

Topographical reasons for floods in Bihar & Assam

1) Flat lands with less slops resulting into poor drainage and slow movement of reivers.

2) Results into more silt deposition, changing reiver courses frequently (e.g. Kosi)

3) Water level is high, so downward penetration is less.

Other reasons

1) Deforestation which increases surface run off & soil erosion

2) Unsustainable dam management e.g release of water untimely.

3) Embankments which increases risk for lower reiparian regions.

4) Blocking of natural drainage e.g unsustainable waste management.

5) Unsustainable urbanisation causing blocking of drainage and urban heat island impact causing urban floods.

6) Climate change causing unpredictability in rainfall.

7) Damming of Brahmaputra by China & release of large sediments

Measures to control the menace

1) Structural measures
   - → Afforestation
   - → Diverting water by canals
   - → Embankments, dams & reservoirs to reduce peak.
   - → Houses on stilts e.g in Assam

2) Non structural measures
   - → Information dissemination regarding flood rates.

→ Flood Plain Zoning

→ Flood Proofing of infra

→ Information exchange regarding river hydrology e.g India-China on Brahmaputra

→ Scientific dam management Practices.

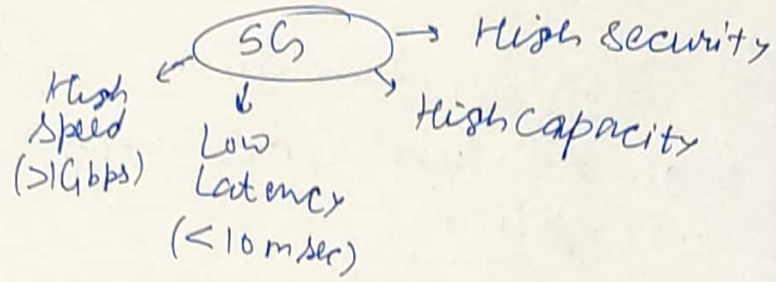
→ Waste management in a way, it does not block natural drainage.

→ Institutional structure for which responds to flood crises promptly

→ Capacity building of local people, PRIs & state govt in responsiveness.

This can allow us make Bihar & Assam more resilient to floods

5G refers to fifth generation technology in Telecommunication



5G can bring digital revolution in India

1) Easier accessibility of content in far away areas.

2) More digital penetration in corporations due to high speed

3) Promotion of telemedicine, tele surgery and e-education

4) More govt. services will be available online.

5) Promotion of Artificial Intelligence & Internet of Things e.g. Deiverless cars.

6) More employment opportunities

7) Agricultural revolution due to Precision farming.

8) Logistic revolution e.g interconnected vehicles.

9) Taxation revolution e.g. high & real time data processing.

Challenges in 5G's adoption

1) High investment needed. Telecom sector already under stress.

2) Lack of digital literacy can increase cases of cyber crime

3) Problems of data privacy in absence of legislation

4) National security concern as telecom equip-ment may be imported e.g Huawei case

5) Still 4G's penetration is not in All India

6) May be less investment in rural areas, as break even may required large population densities,

Way Forward

1) More R&D and domestic production of telecom equipment

2) Govt. support in terms of cheaper loans or viability funding via USOF:

3) Emphasising on some critical sectors initially as test cases e.g. IoT in transport.

This will realise vision of truely interconnected & India as knowledge based economy as envisaged in National Digital Communication Policy.

Quantum technology refers to using qubits as mode of storage system based on principles of superposition & entanglement.

Use of quantum tech in computing

- Faster calculations
- High speed & low latency rate
- Solving complex problems
- Using multivariable options in problem solving

e.g. Sycamore system of Google

Other potential areas

1) Cyber security & deterrance
2) Health sector e.g. finding vaccines for viruses.
3) Weather modelling e.g. Ensemble models
4) Understanding & predicting cosmological phenomenon e.g. supernovas.

5) Better modelling of natural phenomenon & understanding natural hazards.

6) secure communication (QUESS by China)

Challenges

1) High investment required
2) Lack of human resources
3) Can work in highly specific environments e.g. Super cooled environment
4) Can work only on specific problems
5) Lack of global coordination
6) Can be used for non-peaceful purposes e.g designing dangerous virus.

Way forward

1) more investment e.g. national Mission on Quantum computing.
2) Global collaboration with like minded countries.

This can allow positive features of technology to come forward and can benefit mankind,

North-Eastern India has insurgent groups demanding separate state, more autonomy and even sovereignity. But this is changing.

Many have given up violence & engaged in Peace talks

1) Suspension of operation agreement with NSCN(IM)

2) Resolution of Bodo issue after reconstitution of Bodoland Territorial Region

3) AFSPA revoked from Tripura

4) Conduct of regular & fair elections have increased their trust

5) Cooperation with Myanmar & Bangladesh have left few avenues for insurgents.

6) Infra development e.g. Bharatmala, UDAN scheme

7) Breakdown on funding to insurgents by intelligence organisations

8) Reduction of Bru migrant dispute recently.

Some issues that can create hurdle

1) Political opportunism by provoking one community against other

2) Loss of employment opportunities for locals e.g. Bru migrant case.

3) Improper implementation of Terms of agreement e.g with Bodo's, it was 3rd agreement

4) Support for insurgents by outside forces e.g. from China or radicalisation tendencies

5) Impact of climate change, can result into influx of climate migrants (e.g. from Bangladesh)

6) Political situation in

neighbouring countries e.g. Rohingya issue.

7) Inter tribal conflicts can emerge again e.g. Naga vs. Kuki issue

Way Forward

1) Strengthening autonomous institutions under 5th & 6th schedule.

2) Faster implementation of Development Projects.

3) Engaging all other groups hitherto not engaged

4) Winning trust of people by good governance

5) Enhancing employment opportunities via tourism & promotion of service sector.

By this way North East India can become jewels on the neck of Indian subcontinent

India is 3rd most vulnerable country in the world in case of cyber security (Symentec report)

Key vulnerabilities in India's cyber space

1) Lack of awareness & absence of cyber hygiene

2) Less investment in cyber security by individuals & corporates

3) Less availability of trained cyber warriors (Target of National cyber security Policy has not met)

4) Poor global coordination

5) High vulnerability as more than 50 cr internet connections are there in India

6) Less no. of startups in cyber security space.

7) Weak adherence to standard operating procedures

Recent cyber attacks on Kudankulam nuclear Plant

8) Weak Legal framework e.g IT act need amend - ment

9) Security apparatus is weak e.g low awareness in police force

New framework require following aspects

1) Need for defining hierarchical security response

2) Creating cyber defence, deterrance & offensive capabilities.

3) Increasing skill set in human resources

4) More R&D in cyber space sector.

5) Industry - academia - Govt - collaboration e.g Data security council of India

6) Legislative framework for data privacy & security e.g Privacy bill.

7) Signing Budapest convention and compliance with Talinn manual

8) Bringing out human rights charter on cyber space

9) Engaging with global community multilaterally e.g at UN to create global cyber modes of engagement

10) Incentivising corporate sector to adopt cyber security framework.

11) Including cyber security courses in school curriculum

Recently created Defence Cyber Command is a step in right direction. As world moves from cold war to code war, India's role in cyber space is going to be of global importance.