

1. Macro-economic stability is a prerequisite to sustainable growth and job creation. Comment.

Introduction

Macroeconomics is a branch of economics that studies behaviour and performance of the economy as a whole. In macroeconomics, economy wide phenomena are examined such as inflation, price levels, rate of economic growth, national income, gross domestic product and changes in unemployment.

Body

There is no single, simple, quantitative definition of a stable macroeconomic framework.

A stable macroeconomic policy environment features:

- a fiscal stance safely consistent with fiscal solvency
- a monetary policy stance consistent with a low and stable rate of inflation,
- a robust exchange rate regime that avoids both systematic currency misalignment and excessive volatility in the real exchange rate.

Macroeconomic stability and sustainable growth:

- A stable macroeconomic framework is necessary though not sufficient for sustainable **economic growth**.

For instance, in Latin America, the recovery of economic growth in Chile and Mexico was preceded by the restoration of budget discipline and the reduction of inflation.

- High inflation introduces high volatility in relative prices and makes investment a risky decision. This will **negatively impact the growth**.
- Prudent macroeconomic policies can result in low and stable inflation.

Example: India witnessed its best phase of macro-economic stability during 2014-19. Average inflation is down to 4.6% during this period.

- By moving toward debt sustainability, policymakers will help create the conditions for steady and **continuous progress on growth**
- Inappropriate exchange rate policies **distort the composition of growth** by influencing the price of tradable versus non-tradable goods.

Macroeconomic stability by itself, however, does not ensure high rates of economic growth. In most cases, sustained high rates of growth also depend upon key structural measures, such as regulatory reform, privatization, civil service reform, improved governance, trade liberalization, and banking sector reform,

Macroeconomic stability and Job creation:

- Large swings in economic activity, high inflation, unsustainable debt levels and volatility in exchange rates and financial markets can all contribute to **job losses**.
- In order to generate employment at the required scale, countries will have to achieve sustained growth, which in turn critically depends on supportive macroeconomic policies. Example:- USA
- Appropriate macroeconomic policies, along with active labour market policies, can help to manage the cyclical threats to employment, and also boost skills and capacities to ensure that workers can adapt to longer-term structural changes.
- Also, Continued and sustained economic growth is a precondition for employment.

Why is it difficult to achieve macroeconomic stability:

- Macro-economic decisions may even damage the interests/goals of individual economic units.
- Existence of non-merit subsidies is leading to higher levels of inflation.
- Volatile global markets also lead to macroeconomic instability.
- Populist policy measures like farm loan waivers are leading to increased fiscal deficit.

Conclusion

Macroeconomic stability coupled with adequate policy measures and labour reforms can only lead to sustainable growth and job creation.

Best Answer: Jean Grey

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2. While low inflation is desirable in itself, the impact on farmers also needs to be taken into account. Comment. What policy measures can be taken in this regard? Suggest.

Introduction:

Low Inflation is a phenomenon when the prices of goods and services do not increase rapidly. This situation is not much harmful for any economy because it could be controlled by the adoption of certain measures unlike high inflation which is almost uncontrollable.

Body:

Low inflation contributes towards economic stability which encourages saving, investment, economic growth, and helps maintain international competitiveness.

Why low inflation is desirable:

- **Increases investment:** If inflation is low and stable, firms will be more confident and optimistic to invest, this will lead to an increase in productive capacity and enable higher rates of economic growth in the future.
- **Competitiveness:** Low inflation means countries export relative more competitive
- **Stability:** Firms can predict future costs and prices
- **Real savings:** Low inflation prevents saver seeing fall in real value of savings
- **Prevent boom and bust cycle:** High inflationary growth tends to be unsustainable
- **Interest rates:** A low inflation helps in keeping interest rates in check, which in turn helps corporate

Impact on farmers due to low inflation:

- Lowering food prices mean weakening rural incomes and rural demand. Lower income increases debt burden on the farmer, which constitutes a vicious cycle in which the farmer is trapped, leading to farmers' suicide.
- At lower rates of inflation, the price received by farmers for their products are comparatively lower than normal periods. Ex: Farmers in Shahganj, MP were forced to throw their tomatoes on roads due to unremunerative prices.
- Prices paid by farmers for various inputs decreases slower than the prices they receive for their products, thereby the terms of trade for farmers deteriorate at lower levels of inflation.

Policy Measures:

- The government announced new minimum support prices (MSPs) for kharif crops to ensure that farmers get 50% returns over costs.
- The Cabinet Committee on Economic Affairs has given its approval for Green Revolution – Krishonnati Yojana in agriculture sector.
- Recommendations of Ashok Dalwai Committee on doubling farmer income must be taken into consideration.

- Krishi Kalyan Abhiyan was launched by Ministry of Agriculture and Farmer Welfare with an aim to aid and advice farmers to improve their farming techniques and raise their income.
- The government launched an umbrella price support scheme named Pradhan Mantri Annadata Aay Sanrakshan Abhiyan to ensure farmers growing pulses and oilseeds receive remunerative prices.
- PM-KISAN- To provide income support to all Small and Marginal landholding farmer families having cultivable land.

Conclusion:

Usually, low inflation has many benefits, which help improve the economic performance of the economy, however in some circumstances keeping inflation low may be unsuitable for the economy. Therefore, the government should perhaps aim for low inflation but have a degree of flexibility if this appears unsuitable to the current economic climate.

Best Answer: Grace

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3. Examine the impediments that have constrained the growth of exports in India. Suggest policy measures to address the same. .**Introduction**

India has set an ambitious target to double exports of goods and services to \$900 billion and raising the country's share of global exports to 3.5% from about 2%, by 2020, fulfilling which requires a high growth in export sector.

Body**Impediments in growth of exports in India****External factors:**

- Global growth slowdown, which as per IMF it is expected to shrink to 3.3 per cent in 2019.

- Non-tariff barriers by other nations, mainly in case of phytosanitary products e.g. By European Union in case of mangoes.
- Protectionist measures, along with withdrawal of Generalized System of Preferences (GSP) status, by US, which is our largest export destination.
- In most of our FTAs, our counter parts are getting more benefits. For example, India-ASEAN FTA has negative impact on India's export of oil palm and textiles because of competition from Indonesia and Vietnam.
- Most of India's preferential trade agreements (PTAs) have limited product coverage. For example, the India-Mercosur PTA doesn't include textiles and apparel items.
- Global issues like Brexit, macroeconomic stress in Argentina, Turkey and Italy, and the US-China wrangle cause uncertainty in the markets.

Internal factors:

- India's export is not diversified which is evident from the fact that top 20 export categories account for 78 % of the total.
- Competition from neighbouring countries facilitating cheap labour and favourable policies. E.g. Competition in Textile from Vietnam and Bangladesh.
- India is still exporting majority of raw material instead of the final products, for e.g. India is exporting cotton yarn rather than technical textiles
- Poor logistics infrastructure results in weak trade facilitation regime. Cost of India's logistics as a percentage of GDP remains as high as 13-14 %, compared with 7-8 % in developed countries. In World Bank's Logistics Performance Index 2018, it ranks 44, below China (26) and Vietnam (39).
- India's ill-conceived trade pacts have resulted in inverted duty structure – High import duties on raw materials and intermediates, and lower duties on finished goods – That discourage the production and export of value-added items. For e.g. apparel can be imported into India duty free while its raw material -manmade fibers attract an import duty of 10 %.
- As per Economic Survey, there is huge state-wise regional disparity in prevalence of manufacturing industries where few states contribute to major chunks of export.
- Land and labour reforms are still pending, hindering large scale investments in export sectors.

- In case of agricultural exports, low value addition & lack of food processing keeps export low by value.
- Tightly regulated markets do not give enough space for exports to grow. Under the World Bank's Doing Business rankings, India ranks 77, compared with China at 46 and Vietnam at 69.
- Slow progress in drafting trade agreements impacts its ability to participate in global value chains, affecting export growth.

Policy Measures

- India must move up from low-productivity sectors by improving the quality of its human capital.
- Focus on new products like food commodity so that the growth is more resilient and sustainable. Also, it will cushion our exports from the global volatility and shocks in the long run.
- Ease of doing business by reducing red tape, enhancing foreign direct investment limits, revamping labour laws and environmental clearance processes, thus making manufacturing hassle free.
- Improve logistics, by developing industrial corridors, waterways, etc. as in case of Sagarmala and Bharatmala.
- Initiatives like Sampada, which are promoting food processing industry should be given impetus.
- Quality control based on international standards so as to prevent our goods from non-tariff barriers.
- Diligent drafting of trade pacts taking into account the long term goals.

Conclusion

To realize the ambitious targets India has set for itself, it needs to provide not only an impetus to infrastructure and process involved but also invest highly in human capital to make necessary transition from agriculture to manufacturing and services.

Best Answer: Shikha Kesharwani

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4. India's social protection schemes are too many in number, and too inefficient. Do you agree? What suggestions would you give to address these issues?

Introduction:

India being a social welfare state has more than hundreds of schemes if we include both centre and state-sponsored programs in different sectors such as health, education, agriculture etc. to provide better facilities and social protection to the people especially vulnerable section such as poor, women, Children, Senior citizen etc.

Body:

Some of the flagship schemes are:

- Integrated Child Development Scheme
- Atal Pension Yojana,
- Suraksha Beema Yojana
- MNREGA
- Mid-Day Meal,
- Ayushman Bharat
- Pradhan Mantri Awas Yojana
- PM-Fasal Bima Yojna

Despite having so many social protection schemes, India is far behind in creating a harmonious and prosperous society because of Inefficiency of government in the implementation of these schemes due to the following factors:

- Lack of Data causing the inclusion-exclusion error: Most of these initiatives depend on an eight years old database based on 2011 numbers_ the Socio-Economic Caste Census (SECC) _ in an economy which is transforming fast, and where some people have climbed up the income ladder while others have fallen down.
- The multiplicity of schemes: many schemes are designed for the same purpose. Ex. Multiple pension and insurance schemes.

- Hectic and cumbersome process: to get the benefits of schemes. Ex. The complexity of Documentation, Red tapism, Etc.
- Improper monitoring of schemes and absence of feedback system leads to lack of accountability of implementing officer
- Misalignment of incentives: Low incentive for officers to implement the scheme in its full potential. Ex. AASHA worker getting less salary.
- Budget constraints and limited resources of states: states are not able to implement such a large number of centrally sponsored schemes.
- Leakages: in the system. Ex. PDS leakages.
- Nexus: of politicians and private companies. Ex. Pharmaceuticals companies don't want generic medicines to be sold by the government under PM-Bhartiya Janaushadhi Pariyojna.
- Delay: by private companies in PPP model schemes. Ex. Insurance companies not clearing claims of farmers under PM- Fasal Bima Yojna.
- Lack of awareness among people: Government fails in creating an aware atmosphere where people know what the government is doing for them. Illiteracy also causes hindrance in awareness.

Suggestions:

- There is a need to rationalize existing welfare schemes. Schemes should be merged with larger sectoral schemes.
- SECC-type exercise needs to be repeated at frequent intervals to ensure that it matches current reality.
- Use of JAM (Jandhan, Aadhar, Mobile) Trinity for better targeting and Direct benefit transfer.
- Schemes can be tailor-made as per the local conditions as customized policies may work better than homogenous ones in some states
- Need for better coordination among the centre and state governments.
- Need for better coordination among private entities, community, civil society, NGOs and government in designing a public policy in order to improve the transparency, quality and effectiveness of a scheme.

- Need for awareness to the last beneficiary using newspaper, radio, TV, Mobile, Posters, Nukkad Natak, NGO etc
- Incentive-based approach to incentivize the implementing officer.
- The government must employ advanced-monitoring and performance-evaluation techniques to track the progress of schemes and ensure that all relevant data regarding their implementation is available in the public domain.
- The integration of technology-enabled data-collection systems with an online database for timely and accurate updates on program developments.
- Audit by third-party agencies enabling relative neutrality in performance evaluation.
- A universal basic income is a powerful idea which must be implemented.

Conclusion:

Social protection is crucial in ensuring equitable development and it will catalyze the transition to a more stable and robust economy which is must for a New India. Uses of Digital India and E-Governance such as PRAGATI platform are the right steps in this direction.

Best Answer: Pheonix Arises

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5. Agriculture need to be treated not as a sector that has to be propped up through repeated sops, but as an engine of India's job creation and growth. Comment.

Introduction:

While the Agriculture sector in India, with its share in India's economy declined to less than 17%, which provides livelihood to close to half of India's population, has raised concerns, the sector's importance in India's social and economic fabric goes beyond these indicators. It is very rightly called an important engine for inclusive growth in the country.

Body:

India is a global agricultural powerhouse. However, there are shortcomings in the actual realization of this as an engine of growth due to the increased support to the sector through repeated provision of sops rather than fuelling the competitive growth.

Sops/ Concessions given by the government:

- Subsidies: Direct Farm subsidies involve rendering cash to the recipient farmers like food subsidy, MSP-based procurement, providing cash directly to the farmers to buy fertilizers etc. Indirect farm subsidies are not provided in the form of cash but supporting farmers in an indirect manner. For example- subsidizing fertilizer companies to provide cheap urea to farmers.
- Cheap credit facilities and waivers: farm loan waivers, reduction in irrigation and electricity bills.
- Price and Income Support Policy: Various income support policies like Minimum Support Price (MSP), Minimum Export Price (MEP), Market Intervention Price (MIP,) Buffer Stocks Operations, Public Distribution Systems etc.

Impact of the above on agriculture:

- Leads to wasteful expenditure leading to more wastage of resources rather than supporting agriculture. For example: Overutilization of fertilizers in Punjab and Haryana due to subsidised fertilisers resulted in the poor NPK balance in soil, rendering it unfertile in the long run.
- Diversion from the actual root causes of agricultural problems and concentration on short-term policy measures.
- Hampers the competitive growth and exposure required for a robust and inclusive agricultural space.

Measures to boost agriculture as an engine of growth and job creation:

- **Enhanced Agricultural productivity, competitiveness and rural growth:** The contribution of Agri sector in India's GDP (16%) is greater than the world's average (6.4%), thus policy intervention in the right direction can fuel the sector as a key space in the economy.
- **Liberalize constraints to marketing, transport, export and processing:** Improve access to domestic and international markets.
- **Increase investment in research:** Cover new seeds, disseminate new farming techniques widely etc.
- **Improve water resources and Irrigation/Drainage Management:** Piped conveyance, better on-farm management etc. and increasing productivity over land usage.
- **Eschew loan waivers:** As it only diverts resources from needed investment, focus should be on allocation for capacity building.
- **Implement successful policies and rationalize public expenditure with priority to scheme with high returns:** Move to a fixed cash subsidy per acre cultivated based on digitizing and identifying plots as demonstrated successfully by Rythu Bandhu Scheme of Govt. of Telangana.

- **Employ rural youth and promote entrepreneurship:** Successfully demonstrated by the Custom Hiring Centre model implemented by Madhya Pradesh to hasten the pace of farm mechanization.
- **Facilitate conversion of agricultural waste:** Provides a further fillip to farmers' income.
- Encourage village level procurement systems to create a robust value chain, providing employment to rural youth.
- **Convergence of schemes:** Integrate MGNREGA with Blue revolution to promote aquaculture, creation of potential clusters etc.
- **Agriculture and private sector:** Facilitates transition from Agriculture to robust Agri-business systems.
- **Skill development:** Skill development centers providing essential required skills and techniques and helping in capacity building of the young population preparing them for efficient employment.
- **Creation of Agricultural Universities in every state:** Enhancing the outreach of Agriculture as an important sector and attracting and retaining youth in this sector.

Conclusion:

According to IMF, India's economy is predicted to be soon the fastest growing economy in the world. Thus, Agriculture sector in India could become a solid foundation for a robust economy and a central pillar of rural development (approx. 67%), if driven with a more productive, internationally competitive, diversified and sustainable agricultural policy and reforms.

Best Answer: Indian

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6. What is deficit financing? What are the different types of deficits? Examine their implications and significance.

Introduction

Deficit refers to the excess of total expenditure over receipts (excluding borrowings) during the particular year. It is a budgetary situation where expenditure is higher than the revenue. The expenditure revenue gap is financed by either printing of currency or through borrowings.

Body

Purpose of “deficit financing”

- To enable government to obtain necessary resources for the plans.
- The levels of outlay laid down cannot be met by taxation and borrowing from public.

Different types of deficits:

Primary deficit= fiscal deficit- Interest payments

Primary deficit is defined as fiscal deficit of current year minus interest payments on previous borrowings. Fiscal deficit indicates borrowing requirement inclusive of interest payment, primary deficit indicates borrowing requirement exclusive of interest payments.

Implications:

- If a primary deficit of a country is shrinking it means fiscal health of economy is improving,
- A zero primary deficit means that government has to resort to borrowing just to make payment interest.
- If primary deficit is equal to fiscal deficit, then there is no interest payments
- Any government that doesn't borrow to consume is considered to be prudent in fiscal management.

Significance:

- It is a narrower concept, because it includes interest payments.
- It is basic measure of fiscal responsibility.

Fiscal deficit= total expenditure- total receipts except borrowings

Fiscal deficit is defined as excess of total budget expenditure over total budget receipts except borrowings during fiscal year. It is a measure how much government needs to borrow from market to meet its expenditure when its resources are inadequate.

Implications:

- A larger fiscal deficit implies large amount of borrowing.
- Unnecessary expenditure: high fiscal deficit leads high expenditure which in turn leads to inflation.
- Pressure of inflation: deficit financing may lead to printing of currencies which have effect of inflation.
- Debt traps: fiscal deficit is financed by borrowing. It has an effect of repayment of loans and payment of interest can increase.

Significance:

- Fiscal deficit shows the borrowing requirements of government during the budget year.
- Global investors are much interested because high fiscal deficit may push the out of market due to high inflation and interest rate regime can impact profitability.

Revenue deficit= total revenue expenditure- total revenue receipts

Revenue deficit is excess of total revenue expenditure of government over its total revenue receipts.

Implications:

- Government spends more than what it collects.
- It leads to reduction of assets that is either borrowing or selling its existing assets.
- With more and more borrowings it leads to larger revenue deficit.

Significance:

- It impacts credit rating of government because consistent running a deficit implies that government is unable to meet its current and future recurring obligations.
- Increase in revenue deficit places many government expenditure in jeopardy.

Effective revenue deficit= revenue deficit- grants for the creation of capital assets

It is the difference between revenue deficits and grants for the creation of capital assets. This excludes those revenue expenditures which are done in form of grants for creation of capital assets.

Implication:

- Help in reducing the consumptive component of revenue deficit.
- It creates space for increased capital spending.

Significance:

- It was introduced to ascertain actual deficit in revenue account after adjusting for expenditure of capital nature.
- It intended to cure the distortions caused by large scale transfers to other entities for the creation of capital assets.

- **Monetized fiscal deficit= borrowing from RBI**

It is that part of deficit financing which is supported by the RBI. This includes two things: 1) Borrowings from the RBI. 2) Decrease of government's balance in RBI (for the sake of simplicity just know that government maintains some balance with RBI).

Conclusion

Deficit financing can be achieved through borrowings from market, borrowing from RBI or drawing from government. The government should ensure that resources mobilized through deficit financing are channelized for capital formation and economic development.

Best Answer: Ramendra

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7. What is the significance of digital literacy in a cashless economy? How does it help in financial inclusion? Explain with the help of suitable examples.

Introduction

Digital literacy is the ability to navigate various digital platforms and understand, assess and communicate through them. Digital literacy, by this definition, encompasses a wide range of skills, all of which are necessary to succeed in an increasingly digital world.

Body

Significance of digital literacy in cashless economy:

- A cashless economy is one in which all the transactions are done using cards or digital means. The circulation of physical currency is minimal.
- The modes of transaction in cashless economy can be optimally utilised only when people are aware of these technologies. Digital literacy is the key to more effective e-payments and cashless transaction.
- In addition, it is important to dispel doubts and fears that senior citizens have about digital money and the security of their transaction and equally important to induct the younger generation in digital payment space at an early age.
- Post demonetisation, both customers and business owners are seriously considering digital payments mode. To tap these, digital literacy needs to be pushed more among the masses.

How does digital literacy help in financial inclusion:

- Financial inclusion can only happen concurrently with digital literacy, which are twin pillars to mitigate poverty. For ex: 32.4 crore accounts having been opened under the PMJDY but if the account holders do not know how to optimise the financial options open to them, policies, schemes and financial instruments mean little.

- In the era of smart phones, people are performing banking operation on their smart phones itself, for which digital literacy is a must. For ex: Digital platforms like YONO by SBI, AEPS, UPI, etc., deliver financial services to both the unbanked and the under banked population, especially in rural/remote regions, at a low cost, and subsequently increase digital financial access to the vast swathes of the country's population.
- There is gender imbalance in use of digital payments, this is due to insufficient focus on digital literacy. Inclusion of women into formal financial system can bring structural changes to the economy.
- Often the vulnerable sections like differently abled, transgender, tribals etc. are not part of the formal economy. Digital literacy missions must target these sections on priority.

Some of the government initiatives to promote digital literacy:

- National Digital Literacy Mission ('NDLM') has been initiated with the vision to empower at least one person per household with crucial digital literacy skills by 2020.
- The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) being initiated under Digital India Programme would cover 6 crore households in rural areas to make them digitally literate.
- Vittiya Sakshartha Abhiyan (VISAKA), the purpose of which is to actively engage the youth/ students of Higher Education Institutions to encourage and motivate all payers and payees to use a digitally enabled cashless economic system for transfer of funds.

Conclusion

As print medium begins to die out, the ability to comprehend information found online becomes more and more important especially in the financial domain. India being a major economy must reap benefits of digital age for which digital literacy is inevitable.

Best Answer: Jean Grey

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8. What is 'inflation targeting'? Discuss the tools that are used for inflation targeting. How effective have they been in India? Discuss.

Introduction

Inflation targeting is a monetary policy strategy used by Central Banks for maintaining price level at a certain level or within a range. It indicates the primacy of price stability as the key objective of monetary policy.

Body

- The argument for price stability stems from the fact that rising prices create uncertainties in decision making, adversely affecting savings and encouraging speculative investments.
- Inflation targeting brings in more predictability and transparency in deciding monetary policy.
- If the central banks could ensure price stability, households and companies can plan ahead, negotiating wages on the basis of expecting low and stable inflation.
- Various advanced economies including United States, Canada and Australia have been using inflation targeting as a strategy in their monetary policy framework.

India adopted inflation targeting based on Urjit Patel Committee Report. Under this RBI would aim to contain consumer price inflation within 4 percent with a band of (+/-) 2 percent.

Tools for inflation targeting:

- Liquidity Adjustment Facility- With this RBI controls the money supply in the economy. These interest rates and inflation rates tend to move in opposite directions.
- Open Market Operations- RBI buys or sells short-term securities in the open market, thus impacting money available with the public.
- Variable Reserve Requirement- Cash Reserve Ratio (CLR) and the Statutory Liquidity Ratio (SLR) are increased or decreased in accordance with inflation or deflation respectively.
- Bank rate- It is the rate at which RBI lends money to commercial banks without any security. When bank rate is increased interest rate also increases leading to inflation.
- Moral Suasion- If there is a need RBI can urge the banks to exercise credit control at times to maintain the balance of funds in the market.

The tools of inflation targeting have been effective

- Inflation contained- For the last year, inflation remained in the desired bracket of 4%, giving good real returns to the people.
- Impact on growth- Though inflation was within limits, but the growth could not be spurred because of the mandate of RBI to stay within the target.
- Better prediction and stability- With each monetary policy review, RBI provides a 'neutral', 'accommodative', or 'calibrated tightening' stance giving an indication to businesses and banks about the trends in future interest rates.

Conclusion

Inflation targeting thus had tremendous success in controlling inflation through monetary policy. However, growth suffered due to this, thus its advisable to not look at just one indicator, rather at multiple indicators and making financial stability as the underlying theme.

No Best Answer

9. Why is inclusive economic growth imperative for a sustainable future? Analyse.

Introduction

Inclusive growth is a concept that advances equitable opportunities for economic participants during economic growth with benefits incurred by every section of society and creates opportunities for all, especially the most disadvantaged, and distributes the gains from prosperity more equally.

Body

- The push for economic growth in recent decades has led to substantial increases in wealth for large numbers of people across the globe. But despite huge gains in global economic output, there is evidence that our current social, political and economic systems are exacerbating inequalities and volatility, rather than reducing them. According to the Oxfam Report, in India, the top 1% holds 51.53% of the national wealth, while the remaining 99% make do with almost 48%.
- Inclusion and economic growth go hand in hand and one leads to another and both leads to a sustainable future.



Inclusive economic development will include poor, vulnerable, marginalized, women, youth and people from every stratum of society in economic activity for a sustainable future. Let's see a few sections in detail:

- **Women:** Women account for 49.5 % of the population of the country and their inclusion in the workforce and economic activities will greatly contribute to the growth and sustainability of the economy.
- **Farmers:** In India, more than half of the population is dependent on agricultural activities; in this case, the inclusion of farmer by providing them with the benefit of growth is a must for food security and development of food processing industries. This will also lead towards doubling farmer's income by 2022.
- **Youth:** The working age group 15-59 years account for 62.5% of India's population. These population parameters indicate the availability of demographic dividend in India, which will last till 2055-56. Inclusion of youth in countries economic journey by providing them with skills and employment will contribute greatly in the long term economic growth and fruits of this dividend can be enjoyed by this generation and generations to come. Otherwise, it will be a demographic disaster.
- **Tribal:** In tribal areas where the development programs for economic growth come in conflict with the cultural sentiments of the tribal population, which hampers social sustainability.
- **Poor:** Food security and employment opportunity lead to better nutrient intake which ultimately provides a healthy workforce to the nation.
- **Regional Inclusivity:** Some social groups and territories have been left out for decades and need support. This leads to extremist and secessionist tendencies to create volatility and are not in favour of economic growth. With the right policies and investments in essential public services, we can build more cohesive societies and bridge the divides that threaten our future economic prosperity.

In other words, inclusive economic growth is not only about expanding national economies but also about ensuring that dividends reach the most vulnerable people of societies. In order to boost growth and counter the slowdown in emerging markets in long terms, we need to ensure that its benefits reach everybody in society.



Economic Inclusion leads to:

- **Increases investment and Industrial development:** A stable and predictable operating environment with skilled youth available for work is a prerequisite for private sector investments.
- **Overall Development of nation:** The inclusive economic portion of our work is deeply interconnected with other areas of our action, namely food security and nutrition, water and sanitation, sustainability, gender equality and public-private partnerships.
- **Economic development:** Universal access to education and health services, access to financial services, new technologies and affordable bank loans, gender equality, equal opportunity and more equal distribution of resources can all support economic development.
- **Giving everyone a stake in growth:** People would feel more motivated and involved in the benefits of economic growth were allowed to flow into the pockets of lower strata of society.
- **Building trust:** Large segments of the population have faith in their government due to equality and avoid going towards Left-wing extremism, which is good for sustainability.

Therefore, Sustainability and inclusive growth can't be achieved in isolation and they supplement each other. In this way, economic inclusion will lead to financial, social, cultural, political and environmental sustainability.

Conclusion

Goal 8 of Sustainable Development Goals specifically aims to promote inclusive and sustainable economic growth. We should work together toward expanding opportunities

and reducing vulnerabilities with the hope to ensure sustainable economic growth for all, leaving nobody behind to achieve “Sabka Sath, Sabka Vikas, Sabka Vishwas” for New Inclusive India.

Best Answer: Ayush Dubey

<https://tlp.iasbaba.com/2019/07/day-12-q-4-why-is-inclusive-economic-growth-imperative-for-a-sustainable-future-analyse/>

10. Delve upon the factors that have led to different levels of economic growth in different states of India. What measures have been taken to ensure that the backward states catch up the growth wagon? Discuss.

Introduction

The pattern of economic growth across the states in India has been a matter of policy evaluation due to various factors from many years. In the context of ‘balanced regional development’, the trickle-down of growth from one region to another and the spill over effects has a wide gap in India.

Body

Factors that have led to different levels of economic growth across states:

- **Major policy shifts of 1991 and structural adjustments programmes:** Impacted the nature of Centre-state relations and inter-relationship of economies of states due to stabilization measures and strategic changes incorporated as a result of globalisation.
- **Industrial reform policy** did not encourage similar growth momentum in all states as investment expenditures undertaken by individual states differed.
- **Transfer of power** from government controls in favour of markets in deciding the location and level of investment resulting in varied investments across regions. For ex: States like Bihar, MP, Rajasthan etc. lagged behind as compared to significantly growing states like Gujarat, Maharashtra etc.
- **Growth experience of states:** Inability of states to sustain higher growth as a result of dependency on agriculture only. Ex: Steady acceleration of agricultural growth was seen only in Karnataka, Kerala and WB whereas industrial growth fuelled states like Gujarat, Punjab etc. Maharashtra and West Bengal were the only states which witnessed high growth rates across all 3 sectors of agriculture, industry and services.
- **Uni-directional growth spill over** among states: States like Rajasthan and WB are considered growth-inducing states as they subsequently help in growth of other states when they grow, but vice-versa was not observed.
- **Local factors:** Availability of human and natural resources and conducive environment across different states.

- **Quality of state-specific institutions:** Varied investment models, policy implementation techniques etc.
- **Access to markets, communication and transport:** Coastal states like GJ, MH, KL, Andhra Pradesh etc have efficient port facilities for transport and export/import of goods while several states in the hinterland and North-Eastern region suffer from lack of infrastructure as a result of difficult or non-conducive terrain.
- **Social and physical factors:** The socio-economic fabric and the reception of economic factors, barriers due to naxal-affected areas, less attraction to investors due to underdeveloped social indices etc.
- **Distribution of outputs** attributed to growth unequally due to high population in some states.

Measures taken to ensure backward states catch up to the growth wagon:

- **Constitutional provisions:** Special provisions and attention to regions with special needs ensured by Article 371(A-J) which include creation of development boards, facilities for technical education, vocational training, employment in public services etc. most of them directed by the President of India.
- **Implementation of policies** w.r.t the NITI Aayog's Aspirational Districts Programme with a focus on 115 districts which fare poorly in health, education, skill development etc, especially in backward districts of BH, UP and MP.
- **Encouraging outcomes through competition rather than by allocating additional funds:** The states have been asked to be considered as sites of potential transformation rather than poor or backward areas.
- **Higher central financial assistance in schemes:** 90:10 ratios in North-Eastern states to strengthen capacity.
- **Setting up of IITs and other higher quality professional institutions:** For ex: IIT in North Karnataka region.
- **Increasing regional connectivity in transport infrastructure:** UDAN scheme, expressway, Industrial corridors etc.
- **Facilitation of incentives and attractions to private sector:** To avoid shunning out from investment in backward areas.
- **Schemes:** Increasing penetration of Gram Swaraj Abhiyan aimed at improving socio-economic indices in villages lagging behind in key indices.
- Concentration of Mudra loan scheme in underprivileged districts to help create jobs.
- Other schemes like Pradhan Mantri Ujjwala Yojana, DDUGJY, Saubhagya scheme, Swachh Bharat Abhiyan directly or indirectly help in mainstreaming some of the most backward areas in India.

Conclusion

Natural endowments and constraints, initial stages of development, mobility of resources, and a host of other such factors influence growth patterns of regions within national economies. Effective target-based, region specific measures can ensure mainstreaming all regions in the economic growth of India, with reduced disparities.

Best Answer: PrinceK

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11. What are drought resilient farming techniques? Discuss. Assess their suitability for drought affected regions of India.

Introduction

Drought is considered as a deficiency in rainfall/ precipitation over an extended period, usually a season or more, resulting in water shortage causing adverse impacts on vegetation, animals and people.

Body

Dry farming is the profitable production of crops, without irrigation, of land with a low average or highly variable rainfall.

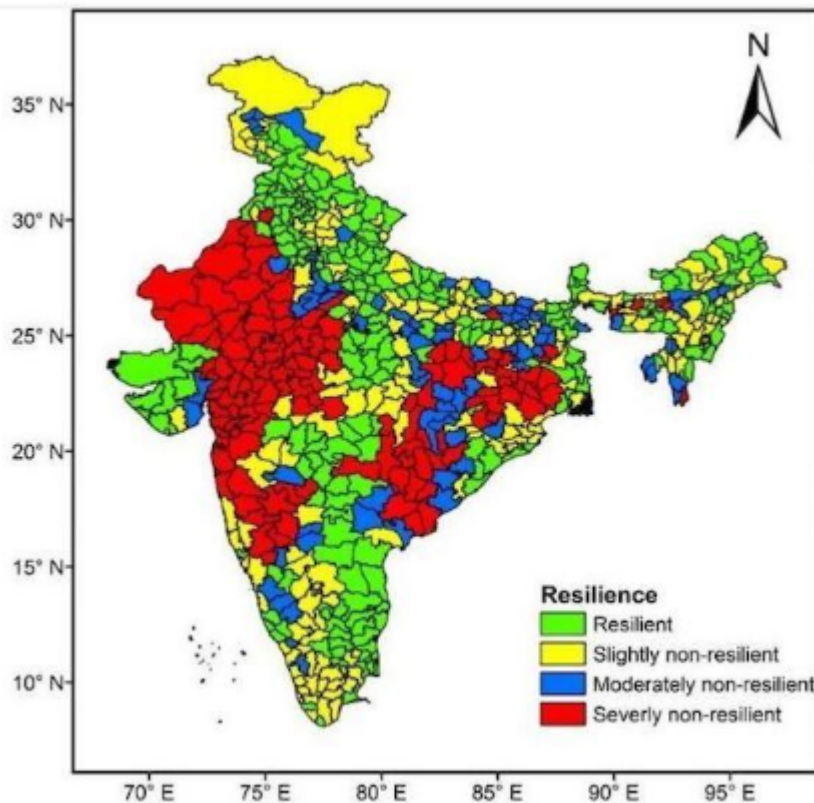
Different drought farming techniques:

- **Bunding:** the first essential step in dry farming is bunding. The land is surveyed and level contours determined every hundred feet.
- **Strip cropping:** strip cropping is a technique that serves to control erosion and increase water absorption thereby maintaining soil fertility and plant response
- **Stubble mulching:** it aims at disrupting the soil drying process by protecting the soil surface at all times, either with a growing crop or with crop residues left on the surface during fallows.
- **Stubble mulching:** it aims at disrupting the soil drying process by protecting the soil surface at all times, either with a growing crop or with crop residues left on the surface during fallows.
- **Dirt mulching:** it aims at disrupting the soil drying process with tillage techniques that separate the upper layer of the soil from the lower layers, making the soil moisture film discontinuous.
- **Intertillage:** Crops sown in rows can take advantage of intertillage practices. This conserves moisture by the formation of dirt mulch.
- **Inter-cropping:** it is growing two or more crops simultaneously on the same field in a definite pattern. The crops are selected such that their nutrient requirements are different. This ensures maximum utilisation of the nutrients supplied, and also prevents pests and diseases from spreading to all the plants belonging to one crop in a field.

- **Crop and variety selection:** Short-stemmed varieties with limited leaf surface minimize transpiration, deep, prolific root systems enhance moisture utilization should be chosen. Quick-maturing varieties are important in order that the crop may develop prior to the hottest and driest part of the year.
- **Drought tolerant crops:** millets are high resistant to drought such cowpea, foxtail, maize, sorghum, bajra , ragi, can be grown along with some type of oil seeds.

Issues:

- About 42% of India’s land area is facing drought, with 6% exceptionally dry—four times according to drought early warning system. Andhra Pradesh, Bihar, Gujarat, Jharkhand, Karnataka, Maharashtra, parts of the North-East, Rajasthan, Tamil Nadu and Telangana are the worst hit. These states are home to 500 million people, almost 40% of the country’s population.
- Failed monsoon in recent years. The North-East monsoon, also known as ‘post-monsoon rainfall’ (October-December) that provides 10-20% of India’s rainfall, was deficient by 44% in 2018.
- About 6% of the land area of the country is currently in the Exceptionally Dry category, which is nearly four times the 1.6% area at the same time last year.



Drought farming techniques in various places:

- The Indian hot arid zone covers an area of 31.7 m ha. (12% of country's total geographical area) in states viz., Rajasthan, Gujarat, Punjab, Haryana, Maharashtra, Karnataka and Andhra Pradesh and 7.03 m ha of cold arid zone in state of Jammu and Kashmir.
- In Rajasthan, in order to save water from evaporation and conserve water, plasticulture as a technique is used. The main crops grown are barley, wheat, ground nut, cotton, mustard and all type of millets.
- Dryland agriculture is important for the economy as most of the coarse grain crops, pulses, oilseeds, and raw cotton are grown on these lands. One hundred and twenty-eight districts in India have been recognized as dryland farming areas. Of these, 91 districts are spread in the states of Madhya Pradesh, Chhattisgarh, Uttar Pradesh and Tamil Nadu.
- Several districts have started taking up organic farming in order to conserve water and soil, HYV crops needs more water and some districts have moved towards millets farming replacing Paddy. In Maharashtra main crops grown are wheat, jowar, pulses, bajra, cotton, oilseeds, turmeric and tobacco.

Note: Only a few techniques are mentioned here, in exam 3-4 techniques along with the regions where they are practiced will make it a complete answer.

Conclusion

Dry farming technique is widely used in Israel. Israel is the example for the world in optimising the use of water in general and agriculture in particular. India has openly embraced Israel for this. Micro Irrigation Incubated in Israel and gradually spread worldwide, micro irrigation has proven to be a technology which has the potential to change the face of Indian agriculture.

Best Answer: Introvert

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12. With the help of suitable examples, examine the significance of decentralised water storage and irrigation techniques for India's agro-climatic conditions.

Introduction

According to the Composite Water Management Index (CWMI) report released by the Niti Aayog in 2018, 21 major cities (Delhi, Bengaluru, Chennai, Hyderabad and others) are racing to reach zero groundwater levels by 2020, affecting access for 100 million people.

Body

India accounts for only about 4 % of global water resources, but supports 18 % of the World's human population and 15 % of its livestock, putting considerable strain on water resources. Agriculture consumes more than 80 % of the total usable water available in the country.

Significance of decentralised water storage and irrigation:

- Decentralised storage systems offer the possibility to provide safe drinking water where centralised supply systems are not feasible due to technical, economical or institutional reasons. Ex: In rural communities or informal settlements.
- Small water bodies (mainly tanks) are less capital-intensive, user-friendly with fewer environmental problems and augment groundwater resources through sub-surface recharge. Ex: Existence of decentralised water storage systems in (Hebbal) Bengaluru, etc.
- Decentralised supply offers the possibility to provide clean, reliable drinking water to rural or informal settlements where centralised systems are not economically or technically possible.
- Wide range of simple, relatively inexpensive and cost effective options are available so people can choose the technologies most appropriate for them. Ex: Drip irrigation, Sprinkler technique, etc.,
- In cities with grave water crisis decentralised water storage is the only solution and the society as a whole should make an effort in this regard. For Ex: Individuals and communities in Chennai have created a simple rainwater harvesting apparatus which can successfully collect 225 litres in just 10 minutes.
- Traditional irrigation techniques such as tankas, khadins, vav, ahar pynes are significant in areas such as arid and semi-arid regions. Ex: Bikaner, Jaisalmer, South Bihar.
- They are independent from an institutional set-up or centralised systems.

Conclusion

The World Bank, in its report India's Water Economy: Bracing for a Turbulent Future (2006), had outlined that dams in India have the capacity to store only about 30 days of rainfall, compared with 900 days in major river basins in arid areas of developed countries. Hence, more efforts need to be taken to develop water infrastructure in a decentralised manner by shifting the focus to cost-effective methods.

Best Answer: UPSC aspirant Agri.

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13. What measures have been taken to reform the agricultural marketing system of the country? Are they successful? Critically examine.

Introduction

Agricultural marketing system refers to the process of buying and selling agricultural commodities. Currently, it is governed by the Agricultural Produce and Marketing Act (APMC) in most states.

Body

Measures to reform:

- Electronic National Agriculture Market (e-NAM) to connect all APMC mandis across states through an electronic portal, thus benefitting both farmers and consumers.
- Model Agricultural Produce and Livestock Marketing Act, 2017 to assist farmers to directly connect buyers to enable them to discover the optimum price for their commodities.
- Model Contract Farming and Services Act, 2018 to integrate farmers with bulk purchasers including exporters, agro- industries etc. for better price realization through mitigation of market and price risks to the farmers and ensuring smooth agro raw material supply to the agro industries.
- Gramin Agricultural Markets (GrAMs) so as to promote 22,000 number of retail markets in close proximity of farm gate.
- Agriculture export policy, 2018 which aims to double agriculture exports from \$30 billion to \$ 60 billion by 2022.
- Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM-AASHA) to ensure remunerative prices to farmers for their produce.
- Development and Strengthening of Grading and Standardization System: Assigning 'AGMARK' to graded products which ensure good quality and also command a better price in the market.
- Farmer Producer Organisation- SFAC has been promoting Agri-Business by encouraging institutional and private sector investments and linkages to ensure the empowerment of all farmers in the country.
- PM Kisan SAMPADA Yojana for creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet.

Success:

- Direct marketing- There are some successful initiatives like April Mandi In Punjab, Uzhavar Sandhai in Tamil Nadu, Shetkari Bazaar in Maharashtra, Hadaspur Vegetable market in Pune, Rythu Bazaar in Andhra Pradesh, Krushak Bazaar in Odisha and Kisan Mandi In Rajasthan.
- Better price realization- Farmers are increasingly getting into contracts with companies like Pepsico giving them better returns and technological inputs.
- Increased profits- Reduction in middleman through initiatives like e-NAM have helped increase profits of farmers.

Challenges:

- **Lack of infrastructure:** open auction platforms exist only in two-thirds of the regulated markets; one-fourth have common drying yards. Cold storage units exist in less than one-tenth of the markets and grading facilities in less than one-third; electronic weigh-bridges are available only in a few markets.
- **Existence of Middlemen:** There are as many as 22,000 commission agents and innumerable middlemen in each market. According to Ashok Gulati, former chairman of the Commission for Agricultural Costs and Prices, commission agents in Delhi charge exorbitant fees ranging from 6 per cent to 15 per cent.
- **'Agriculture' in state list:** Many states fail to implement the guidelines of centre Eg: Model APMC act , eNAM are still not adopted by all states.
- **Lack of grading and standardization facilities** due to which they are not able to get better price and it weakens their bargaining power.
- **Lack of credit facilities** due to which a farmer has to sell his produce immediately after the crop is ready. Adequate credit facilities can enable him to withhold his produce and run his household till he gets a better price.
- **Lack of market information** by way of prevailing condition in the market as well as prices prevailing.

Conclusion

The goal of doubling farmers income by 2022, can only be realized when farmers actually get a fair price for their produce. The measures have been good in spirit, but their implementation towards the objective is the key.

Best Answer: Ayush Dubey

<https://tlp.iasbaba.com/2019/07/day-13-q-3-what-measures-have-been-taken-to-reform-the-agricultural-marketing-system-of-the-country-are-they-successful-critically-examine/>

14. Critically assess the storage and transportation infrastructure in the farm sector. What measures have been taken by the government to address the existing impediments.

Introduction

India is an agrarian Economy. The Indian agriculture sector accounts for 18 per cent of India's gross domestic product (GDP) and provides employment to 50% of the countries workforce.

Body

Currently, India is the major producer of many fresh fruits, vegetables, milk, fibrous plants. India is the world's largest producer of pulses, rice, wheat and spices. Despite being a mega producer of so many farm produce, India lacks terribly in transport and storage infrastructure which provide value addition to the produced.

Issues related to Storage and Transportation Infrastructure:

- **Regional Disparity of Storage Capacity:** The CAG report revealed serious imbalances in the availability of storage capacity and a huge shortage of storage space in consuming states:
 -
 - Out of the total of 336.04 LMT of storage space available with FCI, 64% was located in the large procurement states like Punjab, Haryana, Andhra Pradesh, Uttar Pradesh and Chhattisgarh;
 - Only 13% of the total capacity of FCI was with the consuming states of Rajasthan and Maharashtra.
 - The remaining capacity of 23% was being shared by the other 24 states/UTs
- **Inadequate infrastructure for storage:** There is a gap between agri-warehousing supply and demand at 35 mn MT.
- **Low Private investment:** Due to low returns on investment, this sector is less attractive to private companies.
- **The skewed distribution of capacity:** Skewed distribution of this capacity is another issue, with North India having access to 60% of the total storage infrastructure.
- **Lack of cold storage infrastructure:** India's current cold storage capacity at 31 MT is barely sufficient for fruit and vegetables produced in the country. Most existing cold storages are single commodity storages, resulting in their capacities lying idle for up to six months a year. The cold-chain infrastructure is also unevenly distributed among states.
 - **The poor condition of storage facilities:** Warehouses infrastructure having the poor built quality which may sometime lead to water percolation through ceiling and walls, which damage the produced.
 - **Poor road connectivity:** Road connectivity is weak, especially in hilly areas. Poor maintenance of rural roads is a major constraint as well. Linkages with local and feeder roads remain sub-optimal. This unable farmer to connect to the market. Especially in case of a perishable item, it causes huge loss to farmers.

- **Minimum use of rail freight:** About 1.9 per cent of the perishable fruits and vegetables are transported through rail, while 97.4 per cent of the produce is transported through roads. This ratio needs to shift in favour of the rail network.
- **Cost:** The transportation and storage cost in India is very high compared to developed countries. High cost reduces the competitiveness of Indian agricultural produce both in domestic as well as the export market.
- **Lack of refrigerated Trucks:** Low investment is seen in refrigerated trucks which is a must for cold storage logistics.

Measures were taken by the Government:

Government has taken many initiatives to strengthen the storage and transportation infrastructure such as:

- Inclusion of agri-warehousing under priority sector lending by RBI.
- The tax incentive is given to private players so they take an active interest in this sector.
- Subsidy schemes for farmers to access privately owned warehouses.
- The Warehousing Act which will promote negotiability of warehousing receipts.
- The Private Entrepreneur Guarantee Scheme to incentivize private investment for construction of warehouses by private entrepreneurs, with an FCI guarantee to hire them for 10 years, assuring a fair return on investment by the entrepreneur.
- PM-Gram Sadak Yojna: To connect the hinterlands for better transport connectivity.
- Operation Greens: In the budget speech of 2018-19, a new Scheme “Operation Greens” was announced to promote agri-logistics, processing facilities and professional management. But it is only to seek to stabilize the supply of Tomato, Onion and Potato (TOP) crops, excluding other farm produce.

Conclusion

Unless some very drastic measures are taken to improve the storage capacity of food grains, the wastage of food grains cannot be curbed which otherwise could be utilized for feeding millions of poor people and to achieve SDG 2. Moreover, the development of storage and transportation infrastructure is a prerequisite for doubling farmers’ income by 2022.

Best Answer: Ayush Dubey

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15. Differentiate between direct and indirect farm subsidies. Examine the distortional effects of some of these subsidies.

Introduction

An agricultural subsidy is a government incentive paid to agribusiness, agricultural organizations and farms to supplement their income manage the supply of agricultural commodities and influence the cost and supply of such commodities.

Body

The issue of farm subsidies:

- India and china have jointly submitted a proposal to the World Trade Organization (WTO) for rich countries to reduce high agricultural subsidies.
- The reduction process should begin in 2019 to “remove asymmetry” in the WTO’s agreement on agriculture and eliminate distortions in global trade.
- India’s agricultural subsidy is less than 10 per cent of the market value of total agricultural production. It is far less compared to the developed countries.
- The WTO has allowed them higher amounts beyond ceiling levels. Any meaningful attempt at reforms in agriculture subsidies must address the asymmetry between the developed members and developing members.

Direct subsidies	Indirect subsidies
<ul style="list-style-type: none"> • The beneficiary purchases the good at market price and the subsidy is transferred to him in the form of cash transfer. • Mostly in developed countries. • Have direct impact on farmers’ expenditure and their life. • More efficient system, because free hands to use money. • Individual targets to reach the benefits 	<ul style="list-style-type: none"> • The goods are made available at a lower/subsidized price, credit facilities, loan waiver, reduction in bills etc. • Mostly in developing countries. • Have implicit impacts, as some part of money paid at required end. • Less efficient system, because of less coordination. • Mass target of the people to reach the benefits.

Though it is a good measure to address the plight of the farmers, it can also have an adverse effect in the free markets, which can be highlighted as follows:

- Subsidies directed by the United States government, particularly to corn farmers, can have a spill over affect in developing countries like India. Subsidies granted to the farmers of developed countries are way higher than that given to Indian farmers, thus it can cause distortion to the domestic market of domestic markets as well.

- Fertilizers subsidy, especially UREA when made available cheaply has resulted in overuse, which degraded soil quality, and in return affected the output productivity. Low productivity of Punjab in wheat can be attributed to above cause.
- Also subsidise acts as a barrier for entry to the developed market like European Union who held that India's agricultural products are not up to the mark of WTO's phytosanitary measures.
- Farm related equipment production units are running inefficient in countries like India owing to lack profits and efficient managements due to irrational subsidies, which drain up their capital reserves in long run thus affecting investment in cleaner technologies. These give rise to environmental damages.
- While the developing countries like India and China are not in an affordable position to breach the de-minimus level of Aggregate measures of support(AMS), developed countries like US provides subsidies exceeding 50% in some products such as Canola, cotton, sugar and more than 200% for wool.
- Most benefits of subsidies are allotted to big farmers while in India, 2/3rd farmers are marginal farmers which can't utilize the benefit of subsidy properly. Thus the value of produce of such farmer's decrease.
- It leads to overproduction of one crop over other like fruit, pulses). Thus sometimes grains are piled up for rotting in warehouse.
- Also in market, the trade of such cereals take place on the expense of other non-subsidised products.

Example: The recent trade war between United and China is also the political consequences of the ill effects of subsidies, provided by a particular nation haphazardly. Therefore, complete compliances with the WTO mandated de-minimus level for both developed and developing countries have to committed by all parties.

Conclusion

- India and China have demanded the developed nations at WTO to cut down the farm subsidies under the agreed multilateral trade rules. In WTO parlance, the subsidies are called Aggregate Measurement of Support (AMS) or Amber Box support.
- India and China believe that elimination of AMS should be the starting point of reforms rather than seeking reduction of subsidies by developing countries.

Best Answer: Phoenix Arises

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16. How far the Minimum Support Price (MSP) scheme has addressed agrarian distress in India? What other measures need immediate rollout for effective mitigation of agrarian distress? Suggest.

Introduction

Minimum Support Price (MSP) is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices. The Government of India announces them at the beginning of the sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) for 23 crops.

Body

Success of Minimum Support Price:

- From a situation of massive shortages, India has emerged as a grain surplus country.
- Food security has been achieved at national level.
- There has been an increase in production of grains especially in cereals.
- Food prices have remained stable.
- Increase in agricultural income of farmers.
- Economic transformation in well irrigated regions of Punjab, Haryana, Maharashtra, etc.,

However, there have been certain issues which have hampered the success of MSP such as:

- **Poor Awareness:** NITI Aayog found that only a low proportion of farmers (10%) was aware of MSPs before the sowing season. 62% of the farmers were informed of MSPs after sowing their crops.
- **Non remunerative Price:** It was found in many States that farmers were unable to get cost of cultivation from MSP announced by the government.
- **Distorted Cropping Pattern:** MSP has put excessive focus on Wheat, Rice and Sugarcane in the procurement at the expense of pulses, oilseeds, coarse grains etc., which has resulted in depletion of water resources, soil degradation and deterioration in water quality in some states, especially in the north-western region.
- **Regional Discrimination:** It has discriminated against eastern states where procurement at the MSP is minimal or non-existent.
- **Fiscal Cost:** Subsidy burden of MSP has substantial bearing on Fiscal health and inflationary trend in economy. A recent hike in MSP has also raised question about India subsidy limit defined by WTO.

Other measures which need immediate roll out for effective mitigation of agrarian distress:

The Swaminathan commission had recommended several path-breaking measures to resolve agrarian distress in India. These recommendations are of a more vital nature and in all likelihood will provide a long-term solution to the agrarian crisis and farmers distress.

Some of the recommendation are:

- Effective implementation of land reforms
- Proper irrigation facilities in rain fed areas.
- Increasing productivity of farms
- Technological advancement
- Improve opportunities for assured and remunerative marketing.
- Manufacturing sector must absorb excess labour force from the agriculture sector
- Public investment in agriculture infrastructure
- Promotion of rural nonfarm sectors

Conclusion

The most important goal of any long-term agriculture development policy in India should be to promote agriculture growth along with regional equity and natural resource sustainability. The regional equity and resource sustainability is a precondition for achieving nutritional security and balanced production. The Government must therefore look into the issues of MSP for their appropriate redressal.

Best Answer: SRK

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17. What are the essential components of food security? What measures has the government taken to ensure food security in our country? Are they enough?

Introduction

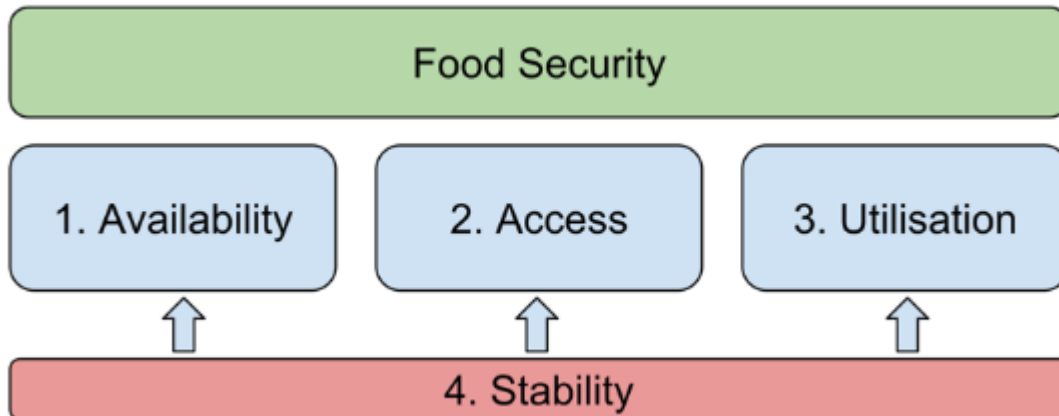
As per World Food Summit, Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Body

The components of food security are:

- Availability- Food availability addresses the “supply side” of food security and is determined by the level of food production, stock levels and net trade.
- Access- Having adequate income or other resources to access food. It incorporates affordability, allocation and preference for food.

- Utilization/consumption- Having adequate dietary intake and the ability to absorb and use nutrients in the body. It includes nutrition, safety and social value regarding food.
- Stability- Stability of the above three components on periodic basis. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on food security status.



Measures by government-

Availability:

- Green revolution- Use of hybrid seeds, irrigation, subsidies to increase agricultural yield.
- Operation flood- Increase in production of milk, which is considered a complete food.
- Minimum Support Price- The MSP helps to incentivize the framers and thus ensures adequate food grains production in the country.

Access:

- National Food Security Act- The Targeted Public Distribution System (PDS) ensures 'Right to food' for the population.
- MGNREGA- To make rural people self-sufficient to buy food for themselves.
- Mid-day meal scheme- To provide sufficient calories intake in children.

Utilization:

- Integrated Child Development Services (ICDS)- To ensure holistic development of children up to six years of age
- FSSAI- It ensures quality of food products being supplied in the market.

Stability:

- Operation greens- To ensure price stability of potato, tomato and onion.
- Focus on Employment generation to ensure affordability of food.

- Pradhan Mantri Krishi Sinchai Yojana- To ensure adequate food production in rainfed areas.

India has taken care of the availability of food and is now a food surplus country from being food deficit once. The affordability of food has also been ensured to a large extent by public distribution system and the 'right to food'.

However, the utilization and stability parts are not yet implemented properly:

- Huge under nourishment- Malnourishment stands at 38.4% as per NFHS-4. Recent outbreak of encephalitis is also attributed to malnutrition to some extent.
- Hidden hunger- Having a cereal centric diet has resulted in lack of micronutrients in people.
- Rainfall failure- During drought conditions, we suffer from food availability due to improper water management and lack of proper irrigation.
- Fluctuations in food prices- Due to faulty agricultural policies and distribution systems, there is often fluctuations in prices in food commodities, with one season seeing a spike in prices and another seeing a price crash.

Measures that can be taken:

- Implementing universal PDS (As per Swaminathan committee recommendations). Focusing on diversification of food basket.
- Integrated nutrient management through precision farming- Attention needs to be given to balanced use of nutrients.
- Use of biotechnology- Bio fortification of food, like rice with Vitamin A will enhance the nutritional value of food.
- Improving the distribution systems and storage capacity of FCI.
- Agricultural research education needs to be improved- Agricultural colleges and universities need to disseminate scientific knowledge and skills to the farming community and to train them to use such skills for better output.

Conclusion

Achieving the goal of zero hunger under SDG Goal 2 by 2030 can be achieved if we focus not only on availability of food but also on the quality and affordability as well as ensuring a stable price regime.

No Best Answer

18. Suggest a roadmap to tap India's real potential in the livestock sector. Identify key focus areas to achieve the same.

Introduction

Livestock plays an important role in the Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock provides a livelihood to two-thirds of the rural community. It also provides employment to about 8.8 % of the population in India, largely to rural women. The livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP.

Body

Animal husbandry is an integral component of Indian agriculture. Livestock provides nutrient-rich food products, draught power, dung as organic manure and domestic fuel, hides & skin, and are a regular source of cash income for rural households. They are a natural capital, which can be easily reproduced to act as a living bank with offspring as interest, and insurance against income shocks of crop failure and natural calamities.

According to the 19th Livestock Census, Livestock resources of India are as follows:

- World's highest livestock owner at about 512.05 million.
- First in the total buffalo population in the world – 105.3 million buffaloes.
- Second in the population of cattle and goats – 140.5 million goats.
- First in milk production in the world.
- Second largest poultry market in the world – production of 63 billion eggs and 649 million poultry meat.
- Third in the population of sheep (72 million).
- Fifth in the population of ducks and chicken.
- Tenth in camel population in the world.

Still, there remains a huge gap between the potential and the realized yields in Indian livestock. Only 50-60% of the livestock potential is realized in different regions of the country because of constraints related to feeding, breeding, health and management.

Areas which need to be focused to realize the true potential of Livestock:

In order to harness the full potential of livestock following areas need attention.

Feeding:

- Livestock derives a major part of their energy requirement from agricultural byproducts and residues. Hardly 5% of the cropped area is utilized to grow fodder. India has a deficit in dry fodder by 11%, green fodder by 35% and concentrates feed by 28%. The common grazing lands too have been deteriorating quantitatively and qualitatively.

Scientific Advancement:

- Improving productivity in a huge population of low-producing animals is one of the major challenges. The average annual milk yield of Indian cattle is 1172 kg which is only

about 50% of the global average. Likewise, the meat yield of most species is 20-60% lower than the world average.

- Crossbreeding of indigenous species with exotic stocks to enhance the genetic potential of different species has been successful only to a limited extent owing to a deficiency in the quality germplasm, infrastructure and technical manpower.

Health Services:

- Frequent outbreaks of diseases continue to affect livestock health and productivity. India has about 55000 veterinary institutions including polyclinics, hospitals, dispensaries and stockman centres. Veterinary and animal health services are largely in the public sector domain and remain poor.

Trade and Market mechanism:

- Globalization will create avenues for increased participation in international trade, stringent food safety and quality norms would be required. The global market for animal products is expanding fast and is an opportunity for India to improve its participation in the global market.
- Access to markets is critical to speed up the commercialization of livestock production. Except for poultry products and to some extent for milk, markets for livestock and livestock products are underdeveloped, irregular and lack transparency. Further, these are often dominated by informal market intermediaries who exploit the producers. Moreover, marketing and transaction costs of livestock products are high taking 15-20% of the sale price.

Finance:

- The sector received only about 12% of the total public expenditure on agriculture and allied sectors, which is disproportionately lesser than its contribution to agricultural GDP. The sector has been neglected by financial institutions.

Institutional Support:

- The institutional mechanisms to protect animals against risk are not strong enough. Currently, only 6% of the animal heads (excluding poultry) are provided insurance cover.
- Only about 5% of the farm households in India access information on livestock technology. These indicate an apathetic outreach of the information delivery systems.

Supporting Facilities:

- Slaughtering facilities are too inadequate. About half of the total meat production comes from un-registered, make-shift slaughterhouses.

- Develop Forward linkages for wool, fibre, meat and milk such as cold storage, food processing industries and textile industries for the consumption of livestock produced.

Schemes/Policies Launched for the Livestock Sector by the Government:

- Rashtriya Gokul Mission
- National Programme for Bovine Breeding and Dairy Development (NPBBD)
- National Livestock Mission: Which has 4 sub-missions in it,
 - Sub-Mission on Fodder and Feed Development
 - Sub-Mission on Livestock Development
 - Sub-Mission on Pig Development in North-Eastern Region
 - Sub-Mission on Skill Development, Technology Transfer and Extension

Conclusion

The growth in the livestock sector is demand-driven, inclusive and pro-poor. The extent to which the potential of livestock can be harnessed would depend on how technology, institutions, policies and financial support address the constraints of the sector. The growth of the livestock sector would have more effect on poverty reduction and will contribute to Doubling farmer income by 2022.

Best Answer: Phoenix Arises

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19. Use of ITC in agriculture can achieve the troika of empowerment, enablement and expansion. Elucidate.

Introduction

The relevance of ICT for Agricultural Development in general and for Agricultural empowerment and enablement in particular is extremely high for a country like India. E-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies in the rural domain, with a primary focus on agriculture.

Body

Empowerment:

- **Strengthen and empower farming community:** ICT technologies can help for strengthening farming communities through wide networking and collaborations with various institutes, NGO's and private sectors. Further, farmers may enhance their own capacities through updated information and wide exposure to scientific, farming and trade community.
- **Empowerment of women:** In rural India, the percentage of women who depend on agriculture for their livelihood is as high as 84%. Women make up about 33% of cultivators and about 47% of agricultural labourers, making them an important client for ICT. It is recommended that appropriate digital strategies designed where Women Self Help Groups (like Jeevika in Bihar) can take advantage to enhance their competencies for its utilization.
- **Rural development:** Safe rural life with equivalent services to those within the urban areas, like provision of distance education, telemedicine, remote public services etc.
- **Digitization of Land Records:** Maintenance of land records and the availability of easily accessible land information. Some of the initiatives in various states include, Rajasthan: Apna Khata; Chhattisgarh: Bhuiyan; Haryana : Jamabandi; Himachal Pradesh : HimBhoomi; Karnataka: Bhoomi; Kerala; Madhya Pradesh; Odisha: Bhulekh; Uttar Pradesh; Uttarakhand: Dev Bhoomi and West Bengal: Banglar Bhumi

Enablement:

- **The timely availability of right information:** The timely information and practical solutions of the agricultural problems allows the farmers to adopt good agricultural practices, make better choices of inputs and to plan the cultivation properly. Its proper utilisation is indispensable for agriculture. Ex: Kisan Call Centres, M-Kisan etc.
- **Improve farm management and farming technologies:** Help farmers carry out economical farm management, risk management considering off-farm factors like environmental impacts, market access, and trade standards with IT based call web support analysis on optimum farm production, disaster management, agro environmental resource management etc., through tools like geographic Information systems (GIS), remote sensing for soil quality assessment.
- **Allows detection of animal disease:** Management and recovery choices of animal diseases enables the farmers to make quick decisions and safeguard their livestock from further health problems. Ex: National Animal Disease Referral Expert System (NADRES) which is a forewarning animal disease system.

Expansion:

- **Facilitate the outreach of agricultural extension system in the country:** ICT based initiatives can be taken for propagation of information, transfer of technology, procurement of inputs and selling of outputs in a way so that farmers can be benefitted.
- **Widen Market Access:** One of the major drawbacks in Indian agriculture is complex distribution channels for marketing of agricultural produce. Farmers do not get acquainted with the updated prices of commodities, proper place for selling their inputs and consumer trends also. ICT has the great potential to widen marketing horizon of farmers directly to the customers or other appropriate users for maximum benefit. This

can improve a farmer's source of revenue; empower farmers for making good decisions about appropriate future crops and commodities and marketing channels to sell their produce as well as to get inputs

- **Initiate new agricultural and rural business:** like e-commerce (Ex: E-choupal, AGMARKNET) realty business for satellite offices, rural business, and virtual corporation of small-scale farms, Agricultural Commodity Trading through NCDEX, NMCE etc.
- NIC, apex body for digital India has a dedicated department for agriculture, which can be used to promote ICT in agriculture by providing cloud services and etc. Further, channelizing things through one gateway will also avoid duplicity of efforts.

Conclusion

Technological empowerment is essential for evergreen revolution and E-agriculture has the potential to put India on the higher pedestal of 'Second Green Revolution' by making Indian agricultural sector self-sufficient. However, digital agricultural interventions need to be pro-poor i.e. technology should be economical and affordable in adoption and implementation.

Best Answer: Sunny Deol

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20. Assess the export potential of India's food processing sector.

Introduction

The Ministry of Food Processing, Government of India has defined dairy, fruits & vegetable processing, Grain processing, Meat & poultry processing, Fisheries and Consumer foods including packaged foods, beverages and packaged drinking water segments within the Food Processing industry.

Body

Export potential of India's food processing sector:

- India's export of Processed Food was Rs. 31111.90 Crores in 2018-19.
- Land area: India ranks second in terms of availability of arable land with 127 diverse agro-climatic zones, having a share of 11.2% of the total arable land in the world. In addition, the resource-rich country has the sixth largest food and grocery market and fifth largest retail market globally.

- Strategic position: The Indian food processing industry is primarily export orient. India's geographical situation gives it the unique advantage of connectivity to Europe, the Middle East, Japan, Singapore, Thailand, Malaysia and Korea.
- Transition phase: Retail, one of the largest sectors in the global economy (USD 7 Trillion), is going through a transition phase in India.
- Quality products: One of the prime factors for non-competitiveness of the food processing industry is because of the cost and quality of marketing channels.
- Mega food parks: The government has sanctioned 42 Mega Food Parks (MFPs) to be set up in the country under the Mega Food Park Scheme. Currently, 17 Mega Food Parks have become functional.
- Big retailer: Globally more than 72% of food sales occur through super stores. India presents a huge opportunity and is all set for a big retail revolution.
- Organized market: India is the least saturated of global markets with a small organized retail and also the least competitive of all global markets.
- Automatic route: 100% FDI is permitted under the automatic route in Food processing industries.
- Approval route: 100% FDI is allowed through government approval route for trading, including through e-commerce in respect of food products manufactured or produced in India.

Challenges in food processing sector

- Food processing sector supply chain today relate to access, infrastructure, and inadequate information for market linkages. This has led to significant wastage of produced foods in the supply chain.
- Numerous laws, under the jurisdiction of different ministries and departments, govern food safety and packaging. The multiplicity of legislation leads to contradictions in specifications, conflicting approach, lack of co-ordination and administrative delays.
- Processed food is still seen as inferior to fresh foods by consumers.
- Forward and backward linkages are not fully developed to match the global market.
- Expensive to match to international standards in processing, storage and infrastructure.

Conclusion

The Food Processing Sector in India represents an attractive investment opportunity for new players both domestic and international. Demand for processed foods over the next decade will increase rapidly due to the steady economic growth, rising income levels and changing lifestyles.

Best Answer: Phoenix Arises

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21. What are the supply chain constraints of India's food processing sector? What steps have been taken to address those? Examine.

Introduction

The food processing industry is valued at US\$258 billion and is the fifth-largest industry domestically in terms of production, consumption, export and expected growth in the country. It contributes to around 14 % of manufacturing Gross Domestic Product (GDP) and 13 % of India's total food exports.

Body

Supply chain management (SCM) is the management of the flow of goods. It includes the movement and storage of raw materials, inventory and finished goods from point of origin to point of consumption.

Supply chain constraints of India's food processing sector:

- **Fragmented supply chain:** The long and fragmented supply chain results in the wastages and price escalations. This is because of the large share of unorganised players in the supply chain and operating commercial viability challenges.
- **Inadequate cold storage and warehousing facilities:** Warehousing is a key requirement in the overall supply chain it is mostly dominated by unorganized players. 20% of warehousing is organized currently with 70% of the organized market controlled by the Government.
- **Logistics in India still face challenges related to quality and connectivity:**
 - Indian national highways account for only 2% of the total road network but carry 40% of all cargo.
 - Port capacity may be increasing, lack of connectivity to these ports leads to cost escalations and delays in the goods transferred.
 - Lack of last-mile connectivity from rail transporters.
- **Slowdown in production growth:** With around 67 percent of landholdings being marginal (<1 hectare), with an average size of 0.4 hectares, more than half of marginal farmers are likely to not have any excess income to spare beyond subsistence, hindering the improvements in farm-level productivity

Apart from the above-mentioned areas of concern, other issues such as Lack of applied research, Taxation issues, Access to credit, Processing plants with obsolete technologies, etc., persist in the sector.

Steps taken to address supply chain constraints:

- **PM Kisan SAMPADA Yojana** is a 6000 crore Umbrella scheme incorporating ongoing and new schemes of the ministry of food processing and industry.
- Some important schemes under SAMPADA yojana:
 - **Mega food parks** – consist of supply chain infrastructure including collection centres, primary processing centres, central processing centres, and food processing units.
 - **Cold chain** – creation of infrastructure facility along the entire supply chain (pre-cooling, weighing, sorting, grading, waxing facilities, mobile cooler vans etc.,)
 - **Scheme for Creation of Backward and Forward Linkages** – to perishable horticulture and non-horticulture produce by plugging the gaps in the supply chain in terms of availability of raw material and linkages with the market.
 - Infrastructure for agro-processing based on cluster approach
- The **National Agricultural market (eNam)** which creates a pan India market facilitates removal of intermediaries, thereby streamlining the entire supply chain
- The new **Contract Farming Act** further helps in improving the backward and forward integration of the supply chain
- **Electronic Negotiable Warehouse Receipt (e-NWR) System** to facilitate an easy pledge financing by banks and other financial institutions
- Inclusion of food processing and agro-warehousing under **priority sector lending** by RBI
- The Logistics challenge of the supply chain is being taken care of by leveraging the existing PM-Gram Sadak yojana, BHARATMALA, and SAGARMALA schemes
- Promotion of Agri Export Zones, one-time capital grants, etc., are being undertaken.
- 100% FDI in this sector.

Conclusion

The Government of India has identified the food processing sector as the sunrise sector. Several initiatives are being put in place for promoting primary as well as secondary processing. For unhindered growth, it becomes important to address the demand and supply side constraints of food processing in India.

Best Answer: Ramendra

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22. What are the upstream requirements of the dairy sector? Examine the existing levels of backward and forward linkages in the dairy sector.

Introduction

India is the world's largest producer of milk, with 21 percent of global production due to its prospering dairy sector, which contributes 4.11% GDP and 25.6% of total Agriculture GDP in India.

Body

Upstream requirements of dairy sector:

- Quality cattle to provide enough milk production for the population
- Dairy farmers and cooperatives that can participate in dairying as the economic activity.
- Fodder availability to feed the cattle.
- Transportation for supplying milk produced to processing centers or market.
- Coolers to improve the shelf life of milk in transportation to processing plants.

Existing levels of backward linkages:

- India has world's highest livestock population, and first in the total buffalo population in the world with 105.3 million buffaloes.
- Dairy farming provides livelihood to two-third of rural community. It also provides employment to about 8.8% of the population in India. India has vast livestock resources.
- Reduction in pasture lands, and decreasing availability of quality fodder owing to rain fed conditions.
- Regional imbalance in availability and quality of transportation and bulk coolers.
- Increasing incidence of veterinary diseases, with low presence of veterinary clinics in rural areas.
- Low productivity of indigenous breeds and lack of nutrition in milk from foreign breeds.
- Low availability of quality breeding bulls and semens and comparatively less success in cross breeding indigenous and foreign breeds.
- Excessive use of anti-biotics in cattle growth.
- Less than adequate extension services.

Existing levels of forward linkages:

- Lack of marketing facilities for farmers.
- High presence of middleman that eats away profit of farmers.
- Regional success of cooperatives, only in some states like Gujarat and Maharashtra.
- Price rise due to increasing focus on protein intake, especially in urban areas.
- Adulteration and presence of synthetic milk. Around 70% of Indian milk doesn't meet the standards set by set by the Food Safety and Standards Authority of India (FSSAI).
- Untapped export potential due to issues like quality, hygiene etc.
- A taxation rate of 12% on dairy equipment and machinery.

Way forward

- Cost effective and nutritionally balanced feed for animals.
- Encouragement to cooperatives pan India.

- Reproductive efficiency of cattle be improved.
- Training related to entrepreneurial marketing of milk and milk product
- 'Optimum usage of technology' for cattle management.
- Improvement in logistics.

Conclusion

The active involvement of National Dairy Development Board (NDDB) in growth of dairy sector and the creation of Dairy Processing & Infrastructure Development Fund (DIDF) along with other initiatives in the sector are a welcome step not just to achieve growth in the sector but also to fight malnourishment and hidden hunger in country.

Best Answer: aditya2304

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23. The staggering diversity of culture, customs and cuisine in India makes food processing industry one of the promising sectors of the economy. Do you agree? Substantiate.

Introduction

India is a diverse country with its diversity ranging from ethnicity to religion and from cultures to cuisines. India celebrates thousands of cultural and religious festivals and has a number of customs. This diversity promises growth in many economic activities which are directly or indirectly associated with it, such as tourism, food processing industry etc.

Body

The term 'food processing' is mainly defined as a process of value addition to the agricultural or horticultural produce by various methods like grading, sorting and packaging.

India's food processing sector is a sunrise industry and spans a wide range of products that includes fruits and vegetables, meat, fish, seafood and poultry; dairy and dairy products; fermented foods and drinks; grains, cereals and millets; bakeries; confectionery; etc. Of these, RTE (ready to eat) and RTH (ready to heat) foods have grabbed special attention.

The staggering diversity of culture, customs and cuisine in India makes food processing industry one of the promising sectors of the economy in the following ways:

- India has been a forerunner in giving diverse facets to this art of food processing. Using salt and oil to pickle surplus vegetables and sun-drying brined vegetables and fruits to increase their shelf life, and survive scarcity and unfavourable conditions is nothing new in Indian households.
- Regional Customs and food habits are diverse in India, for example, North-East and South India have different customs and cuisines. By this FPI gets a diversity of product range and also gets market for different products as per regional customs demand.
- Usage of many fruits is crucial for many traditional customs of the country. These fruits can be made available during the offseason in any part of the country by processing and increasing their shelf life.
- Dairy items such as milk, *Ghee and Shrikhand* which are used in bulk for many festivals can be made available where their production is low due to the regional disparity. Demand for dairy products is expected to grow at a healthy rate of 15 to 20 per cent over the next five years.
- Indian belief in *Atithi Devo Bhava*. Many serve bakery products to guest along with tea to show hospitality, which is also part of Indian culture. Therefore, Bakery products are a related segment that has also the potential to grow strongly.
- Dietary habits of most Indians are associated with their culture and religion, due to which some are pure vegetarian and some are non-vegetarian. With increasing population, demands for both vegetables as well as meat, fish and chicken is increasing day by day which can be fulfilled by FPI. There is a large potential for setting up modern slaughter facilities and development of cold chains for vegetables and meat.
- In the fisheries segment also, India's long coastline and network of inland waterways and lakes offer plentiful availability of different types of fishes. Many fish-eating coastal residents are now living in cities away from the coast due to internal migration. So FPI can play an important role to place particular fish in their plates.
- FPI has huge potential for giving Indian test of diverse cuisine to the world. The home-grown food brands such as Haldirams with a suitably ethnic product range can serve the global market.
- Traditional summer beverages such as *Lassi, Aam Rus* and *Aam Panna* can be served across the length and breadth of the nation and also abroad.

Hurdles and Drawbacks:

FPI companies haven't quite managed to make inroads into the centre of the Indian consumer's plate due to the following reasons:

- Attempts to force-fit global food preferences to the Indian marketplace.
- Company's failure to recognize the enormous regional diversity in food habits.
- Lack of customizing global products and flavours to the local palate.
- Consumer backlash against preservative and calorie-laden processed foods.
- The recent controversy over cattle slaughter is not good for the meat industry.
- Large sections of women who are housewives prefer serving homemade and home preserved food considering it to be healthier.

Conclusion

Under the Make in India initiative, the Government plans to stimulate growth in the Food Processing sector through the creation of a strong infrastructure, reduction of food wastage and promotion of Ease of Doing Business (EODB) measures. The upcoming 'Scheme For Agro-Marine produces Processing and Development of Agro-clusters' (SAMPADA) will provide a renewed thrust to the sector.

Best Answer: Ramendra

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24. What is land banking? How does it affect various stakeholders? Discuss.

Introduction

Land banking is the practice of aggregating parcels or blocks of land at current market rates or lower, for future sale or development. A land aggregator aggregates land by tracking the geographical and topological locations, which are primed for investment, based on social infrastructure and demographic factors.

Body

Organisations that engage in land banking:

- **Federal, state and local governments:** Government agencies use land banking to support long-term civic planning or to support future economic development. Municipalities gain and hold ownership of land to be used for new roads, metro stations, hospitals, schools, parks or for economic or residential development efforts.
- **Businesses:** The aggregators can purchase and hold undeveloped or pre-developed land parcels, which expected to increase in market value, for long-term business gains.
- **Universities and non-profit entities:** Universities and non-profit entities purchase land for future growth and/or expansion in public interest.
- **Individuals:** Owning properties, including land, provide a sense of security. Individuals can use land as wealth creation vehicles, either for their retirement plans, to pay for their children's education, or to create a family legacy.

Advantages:

- Land banking provides tools to quickly turn non-agricultural land into usable parcels.

- The Government can use these lands for the public projects like highway construction, drinking water protection, afforestation, nature restoration and promote economic development.
- Land bank can also provide the land to the private entities for their commercial purpose. In this process local governments benefit from the rental paid by the private entities when land is paid on lease thus acquiring gainful income which is then used for the welfare of the local areas.

However, land banking also has significantly affected its stakeholders:

Government agencies:

- **Ambiguity:** Buying and selling prices in various states is be ambiguous thus there is no uniformity.
- **Questionable to local residents:** Most times the lands come under conflict, and result in denial of people's rights.
- **Vacant land comes with expensive liabilities:** A vacant lot owned by a land bank does not produce property tax revenue, and sometimes comes with maintenance costs.

Private entities and individuals like farmers, local residents etc:

- **Problem with disputed land:** Land banking by real estate private agencies or individuals will not deal in disputed properties, especially those under litigation.
- **Stalling of projects:** Some companies buy the lands for their projects but those projects are never carried out. This has often led to conflicts between farmers and states, stalling projects uneconomically. For example: When POSCO signed an agreement with the Odisha government to set up a steel plant in Nuagaon and nearby villages in 2005, the 700 families affected were not enthused. Over generations, the locals had developed a deep bond with the land and the forest, beyond merely as a source of employment and their only possession resulting in a decade-long resistance including legal challenges followed, at the end of which POSCO shelved the project in 2015.
- **Unable to attract investment or sell the land by the land banking entity:** The full potential of land banking can only be realised, if the land is purchased in the under-developed/early phase. Land banking works on the premise of patience. Most investors ignore land banking as an investment, due to the long term nature of the business.

Conclusion

Land banking as a strategic response has proven to be a powerful solution, allowing public control of abandoned property; assemblage of parcels for residential, recreational, commercial and industrial redevelopment; and empowerment of communities to reverse the social and economic consequences of neglected and abandoned property. However, care must be taken to prevent disruptive and unreasonable usurping which will only lead to denial of rights rather than work in the rightful interest of people.

Best Answer: Jean Grey

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25. What are the various forms of privatisation? Which one of them has been the most prominent one in India? Discuss.

Introduction

Privatization generally refers to inducing private sector participation in the management and ownership of Public Sector Enterprises. In India Privatisation began with the 1991 LPG Reforms.

Body

Privatization in India

Privatization in the country was launched mainly to enhance the efficiency of the public sector enterprises as well as to concentrate the operation of the public sector in priority areas.

Types of Privatisation:

- Privatization is often referred as denationalization and destatization i.e., transfer of the state ownership of the assets to the private sector to the tune of 100 per cent. India never ventured into such type of privatization.
- Another type of privatization is disinvestment. This process includes selling of the shares of the state-owned enterprises to the private sector. Disinvestment is de-nationalization of less than 100 per cent ownership transfer from the state to the private sector. If the sale of shares of the state-owned assets has been to the tune of 51 per cent, the ownership is really transferred to the private sector even then it is termed as privatization.
- Another way, in which the term privatization has been used around the world, is very wide. Basically, all the economic policies which directly or indirectly seem to promote the expansion of the private sector or the market (economy) have been termed by experts and the governments as the process of privatization. We may cite few examples from India—delicensing and de-reservation of the industries, even cuts in the subsidies, permission to foreign investment, etc.

India has been following privatisation strategies like selling of loss making units to the private sector, inviting private participation in PSEs, and strategic sale etc.,

Most Prominent type of Privatisation in India – Disinvestment.

The New Industrial Policy of 1991, introduced disinvestment policy along with other economic reforms.

Journey of Disinvestment as a Process:

- It helped to raise finances for the government which are spent on social sector priorities and reduces the debt burden of the government. Eg. Against the target of Rs. 80000 crores stipulated in the Budget 2018-19, the government has earned over Rs.85000 crores from disinvestment in 2018-19.
- It exposed the PSUs to market discipline forcing them to become more efficient and survive on their own financial and economic strength.
- It reduced the burden on the government by limiting the budgetary support which it has to provide to PSUs. Until 2016, the government has raised around Rs. 1.8 lakh crores through disinvestments, beginning in 1992.
- It can end the public sector monopoly in many sectors, introduce competition, reduce the costs and improve the quality of services offered to consumers. E.g. telecom, civil aviation.

Few fallouts

- Government shareholding in PSUs is a public asset is being liquidated to meet the immediate needs.
- PSUs act as a check on private enterprises and safeguard the wider public interests in the market. For example, in the absence of PSUs, private enterprises may form a cartel.
- When the government goes for a strategic sale/privatization, there are chances of a PSU being sold off at a lower value to a private entity which can be against the larger public interest.

Conclusion

In India, hence privatization is a successful strategy and unique in form in accordance with the priorities of our mixed economy and as well as by considering operational aspects of the PSUs.

Best Answer: Ayush Dubey

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26. What objectives can the liberalisation of the defence sector achieve for India? Analyse.

Introduction

The Defence Sector in India, being a strategic sector, was traditionally reserved for the Public Sector till 1991. Defence Public Sector Undertakings (Defence PSUs) and Ordnance Factory Board (OFB) monopolised defence products manufacturing while R&D was the exclusive turf of DRDO.

Body

Background:

- Until the year 2000, foreign direct investment (FDI) was not permitted in the Indian defence sector.
- The year 2001 marked the advent of privatization in the defence industry and the Government permitted FDI in the defence sector up to an equity stake of 26% through the Government approval route.
- In 2014, it was increased up to 49% FDI under the automatic route and beyond 49% under the Government approval route, subject to certain conditionality.
- Recently, FDI in the defence sector was further liberalised to allow up to 49% under the automatic route, and beyond 49% to 100% under the Government approval route on a case to case basis.
- Draft New Defence Production Policy liberalises licences that will be provided to defence industries and the requirements for renewal of licences will be pruned. Also, the companies with a good track record will be given favourable consideration.
- Other steps include simplification of export procedure, streamlining of defence offset guidelines etc.

Benefits of liberalization:

- **Quality Products**– Infrastructure facilities are likely to improve due to higher capital infusion. Manufacture of improved quality products due to inflow of technology, expertise, improved R&D and better production facilities.
- **Reduced cost**– The cost of production is also likely to reduce due to economies of scale and manufacturing within country, making Indian weapons and equipment globally competitive.
- **Reduction of Reserves**– Higher FDI translates into better infrastructure, enhanced capacities and greater self-reliance. This would in turn also result in reducing the stock levels of reserves of munitions, weapons, equipment, assemblies and components held at various echelons of the Armed Forces.
- **Boost to Economy**– The capital base of the country will be positively affected due to inflow of foreign capital. This will also lead to increase in tax revenue.

- Positive Performance Pressure on Public Sector Enterprises-The public sector enterprises, namely, Defence Research and Development Organisation (DRDO), Defence PSUs and OFB will face increased performance pressure.
- **Employment Opportunities**– Increased defence manufacturing will create employment opportunities, both in organised and un-organised sector, for large number of unemployed people due to increased level of economic activity.
- **Increase in International Trade**: Increase in international trade, both by value and volume, due to enhanced production capacity, increased competitiveness and export-oriented outlook.
- **Insulation from Embargoes**: Presently, India is procuring most of the critical weapons systems and equipment that are either manufactured or both manufactured and integrated abroad. When the same weapons systems and equipment are manufactured in the country, indigenous production will tend to insulate the country from unilateral imposition of embargoes by whimsical foreign suppliers.
- **Intellectual Property**– The new policy and measures can promote India as a hub for defence related Intellectual Property (IP).

Challenges of liberalization:

- **Security Concerns**: Security issues especially with respect to proliferation of modern communication equipment, electronic counter measure equipment and small arms may arise. Moreover, in India which has significant internal security issues including Naxal violence and terrorism, liberalization for all items in the Defence Products List has a fair potential to give negative results.
- **Competition for Domestic Private Industry**: The Indian private industry is not yet well established in the defence sector. The JVs that are formed post investment by established foreign defence companies, will offer stiff competition to domestic private defence industry. Hence, opening of floodgates for more than 49 percent (and up to 100 percent) FDI in defence sector is likely to dwarf many domestic players, who may find the going difficult and get wiped out in the competition.
- **Overbearing Presence of Foreign Companies**: Unrestricted FDI in defence sector may lead to overbearing presence or a kind of monopoly in production of high technology weapons and equipment by select foreign companies in the absence of majority stake holding by Indian citizens and/or lack of adequate control by the Indian Government.
- **Sharing of Benefits**: Foreign investors may tend to utilise the domestic resources without sharing adequate benefits with the host country.
- **Emergence of Cartels and Lobbies**: There is a likelihood of the emergence of cartels and lobbies which collude to raise defence expenditure or garner greater share of the defence procurement pie.

Conclusion

Self-reliance is a major corner-stone on which the military capability of any nation rests. However, to grab position among the top defense production countries of the world and improve its defense related capabilities, India must make a balance between liberalization and the security and other concerns.

No Best Answer

27. What are export oriented units (EOUs)? How are they different from Special Economic Zones (SEZs)? What incentives do EOUs get? Discuss.

Introduction

With intent to give impetus to forex reserves of the country, Government has been regulating the export-import policy and has introduced various schemes for promoting exports of both goods and services. Special Economic Zones (SEZ) and Export Oriented Units (EOUs) schemes are also part of this export promotion strategy.

Body

Export-oriented units: They are units undertaking to export their entire production of goods. The main objectives of the EOU scheme are to increase exports, earn foreign exchange to the country, transfer of latest technologies stimulate direct foreign investment and to generate additional employment.

Special Economic Zone: It is a specifically delineated duty-free enclave and shall be deemed to be foreign territory for trade operations and duties and tariffs. In order words, SEZ is a geographical region that has economic laws different from a country’s typical economic laws. Usually, the goal is to increase foreign investments.

Difference of SEZ and EOU:

Factors	Special Economic Zone (SEZ)	Export Oriented Units (EOU)
Location	Can only be set up in the demarcated custom bonded areas notified by the government.	EOU Scheme specially offers flexibility in location as a unit can be established in any industrial or commercial areas.
Conversion	In SEZ conversion of the existing unit is not allowed.	Conversion of the existing unit into EOU is permissible.
Investment Criteria	No investment criterion is prescribed under the SEZ scheme.	Minimum investment of Rs. 1 crore in plant and machinery is prescribed. However, this condition shall not apply to existing unit and units in agriculture, handicrafts and handmade jewellery etc.
Period of utilisation	Duty-free goods (except capital goods) to be utilised within five years.	Duty-free goods (except capital goods) to be utilised

		within three years.
Trading	Trading unit can be set up under the Scheme.	It had been discontinued under EOU scheme.
Custom Clearance	In case of SEZ units, customs clearance for export and import is obtained within the zone itself.	Fast Track Clearance Scheme (FTCS) for clearances of imported consignments for EOU.
Supplies made by Indian Suppliers Infrastructure	Supplies to SEZ are 'exports' and all export benefits are available.	Supplies made to EOU by Indian supplier are 'deemed exports' and supplier is entitled to benefits of 'deemed export'.
Foreign Investment	Cent per cent FDI investment is permitted through automatic route without approval for SEZ manufacturing unit.	Formal FIPB approval as per sectoral guidelines is required.
Infrastructure	General infrastructure available to SEZ unit is much better. It offers well-developed enclaves of industrial infrastructure with plots, built-up space, power, water supply, transport etc.	General infrastructure available to EOU unit is not as better as available to SEZ units.
Income Tax Exemption	Provides for deduction to the extent of 100% of profit and gains for 5 consecutive assessment year and thereafter to the extent of 50% of the profit and gains for a further period of 2 assessment year and for the next 3 consecutive assessment year, so much of the amount not exceeding 50% of the profits as is debited to the Profit/Loss account of the previous year.	Section 10B of Income Tax Act, 1961 allows relief from Income Tax burden for a period of 10 consecutive assessment years.

The Export Oriented Units (EOUs) is complementary to the SEZ scheme. It adopts the same production regime but offers a wide option in locations with reference to factors like the source of raw materials, ports of export, hinterland facilities, availability of technological skills, the existence of an industrial base and the need for a larger area of land for the project.

Incentives of Export Oriented Units:

- Allowed to procure raw material or capital goods duty-free, either through import or through domestic sources.
- Eligible for reimbursement of GST.
- Eligible for reimbursement of duty paid on fuels procured from domestic oil companies.
- Eligible for claiming the input tax credit on the goods and services and refund thereof.
- Fast track clearance facilities.
- Exemption from industrial licensing for the manufacture of items reserved for SSI sector.
- Export through the third party permitted.

- No restriction on foreign shareholding and 100% convertibility of export earnings at market rate.
- Unrestricted remittance of profit and dividends.

Conclusion

This bold and time-tested scheme of EOU requires revamping and a fresh lease of life as well as need special attention for growth. It is also possible to attract further investment in this sector if proper conditions are created.

Best Answer: Redeemer911

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28. The small and medium enterprises hold the key for accelerating India's economic growth? Elucidate.

Introduction

As India gears up to retrace the high growth path, the Micro, Small and Medium Enterprises sector assumes a pivotal role in driving the growth engine. This sector in India continues to demonstrate remarkable resilience in the face of trailing global and domestic economic circumstances.

Body

Importance of small and medium enterprises in India's economy:

- **Present contribution of the sector to overall economy:** The share of MSME Gross Value Added (GVA) in total GVA during 2016-17 was 31.8% and Exports' contribution which currently stands at 50%.
- **Employment generation:** The small and medium enterprises account for 11.10 crores jobs, becoming the 2nd largest employment provider. SMEs are thought to have lower capital-output and capital-labour ratios than large-scale industries, and therefore, better serve growth and employment objectives.
- **Helps in inclusive growth:** the larger population in India is involved in the economy in a big way through the SMEs. It focuses on empowering people to break the cycle of poverty and deprivation, on people's skills and agency.

- **Checks rural-urban migration:** In the village, a person may at least live a dignified life, but when he becomes a slum dweller in the city, what he is put through is quite terrible. Not only do MSMEs generate the highest employment per capita investment, they also go a long way in checking rural-urban migration by providing people living in isolated areas with a sustainable source of employment.
- **Increases export potential and promote sustainable growth:** The share of MSME related Products in total export from India during 2018-19 is 48.10%. A major portion of the exports from SMEs are handcrafted and eco friendly and thus help in sustainable growth.
- **Strong backward linkages:** They act as ancillary industries for Large Scale Industries providing them with raw materials, vital components and backward linkages. For ex: large scale cycle manufacturers of Ludhiana rely heavily on the MSMEs of Malerkotla which produce cycle parts.

Challenges for the growth of SMEs:

- Deficiency in basic infrastructure: Such as water, rail, digital connectivity, electricity etc rendering them less productive in several stages.
- Difficulty in access to capital and thus, heavy dependency on informal sources of credit.
- Slow market penetration and weak design as a market driver.
- Lack of latest technology.
- Reduced competitiveness compared to imported products.
- Weak expansion and confinement to rural India and thus problem of a huge number of unregistered SMEs.
- Lack of skilled labour.
- Increase in red tapism and bureaucratic difficulties.

However, many of the obstacles and shortcomings have been addressed in the recent years:

- **Policy support:** MSMED Act 2006 and subsequent amendment in 2018, National Apprenticeship Promotion Scheme, Revamped SFURTI (Scheme of Fund for Regeneration of Traditional Industries), ASPIRE (A Scheme for Promotion of Innovation, Rural Industries and Entrepreneurship), MSME Outreach programme in 2018 etc. Prime Minister's Employment Generation Programme (PMEGP) alone generated employment of 5.87lakhs (number of persons) in micro enterprises during the years 2018-19 only.
- **Infrastructure strengthening:** MSME Samadhaan, Udyami Mitra Portal, MSME Sambhandh, Zero Defect-Zero Effect scheme, Cluster Development Programme, National Manufacturing Competitiveness programme (NMCP) etc.
- **Credit and financial strengthening:** Through Technology Development and Acquisition Fund (TADF), Trade Related Entrepreneurship Assistance and Development Fund (TREAD), Mudra Loan scheme, Trade receivables discounting system (TReDS) etc.
- **Definition of MSMEs:** Classifying MSMEs from current investment in plant and machinery criteria to annual turnover criteria, compliant with the formally introduced GST regime.

What can be done?

- **Recommendation:** Kochi based Institute of Small Enterprises and Development at the South India MSME Summit 2019 in Bangalore in its report recommends an entitlement approach that can have the potential of compelling all related stakeholders to work on a common national agenda and solutions under a scientifically structured framework.
- **Availability of Uncollateralized Credit:** Create or sponsor multiple streams of credit funding for legitimate MSMEs as most service MSMEs do not have hard assets against which to secure credit.
- **Free or Subsidized Education and Training in Business Management:** Publicly funded colleges and universities must be set-up to create free or subsidized curricula for MSMEs to gain business knowledge and related skills.
- **Simpler Business Registration and Insolvency Regulations:** Make it easier to form new businesses and to suspend operations or restructure with adequate insolvency protection as is the norm in most countries.

Conclusion

The Indian MSME sector is poised for rapid growth and integration with major global value chains. Timely policy intervention and due support will definitely result in rendering the Indian MSMEs globally competitive. Thus, the emerging focus of India's MSME policy should aim at covering the entire lifecycle of MSMEs to ensure a healthy, vibrant and competitive MSME sector.

Best Answer: Jean Grey

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29. What further measures can be taken to liberalise the farm sector? Suggest. What would be its long term implications? Examine.

Introduction

Liberalization is any process whereby a state lifts restrictions on some private individual activities. Liberalization occurs when something which used to be banned is no longer banned, or when government regulations are relaxed.

Body

Measures taken to liberalise farm sector:

- Infrastructure: Infrastructure development requires public expenditure which is getting affected due to the new policies of fiscal compression. Liberalization of agriculture and open market operations will enhance competition in “resource use” and “marketing of agricultural production”, which will force the small and marginal farmers.
- Small and marginal farmers: Encouraging public and private investments to develop infrastructure like cold chains; special attention for north-eastern, eastern and rain-fed states for augmenting scope of access to institutional credit; and rationalisation and targeting of input subsidies towards small and marginal farmers.
- Irrigation: The government wants to ensure that rural India gets investment, public as well as private, to the tune of Rs 25 lakh crore in five years. It also wants to bring one crore hectares of land under micro-irrigation.
- Land consolidation: Reform in land leasing laws to promote land consolidation and contract farming; and accelerating the pace of public investment in agriculture and ensure greater efficiency in capital use.
- Agriculture exports: Agricultural exports are playing an important role in expanding economic activities along with generating employment opportunities.
- Food processing: To invite foreign capital into this industry the Government has permitted 51 per cent foreign equity partnership and also offered prompt approval of foreign technology transfer to the food processing industry of the country.

Long term implications:

- Diversification of agriculture: commercial crops, horticulture, floriculture, aromatic plants, medicinal plants can be grown in large. The demand for these products has been increasing considerably. Thus, there is an ample scope for the development of agricultural sector both in terms of increased production and trade.
- Beneficial to developing countries: The liberalization of agricultural markets will be beneficial to developing countries in the long run; it will force the adoption of new technologies, shift production functions upwards and attract new capital into the deprived sector.
- Investment from other countries: Liberalised economic environment, efficiency and growth orientation will attract maximum attention to invest more from other countries.
- More employment: Increasing potentiality of the agricultural sector as emerged from the liberalisation/globalisation wave has set up new trends in horticultural, floricultural and animal product and has created ample opportunities and scope for employment of huge number of population.
- More subsidies: The volume of subsidies granted to agriculture, in respect of fertiliser, irrigation and electricity charges etc. has been increasing in our country.
- Institutionalization of agricultural credit: The wave of liberalisation has encouraged the institutional agricultural credit. In the initial stage of post-independence period, Indian farmers were depending too much on unorganised sources of agricultural credit, i.e. on village money lenders, landlords, traders etc.

Conclusion

Commerce and industry ministry came out with a blueprint suggesting a host of long and short-term measures to increase the size of India's economy to USD 5 trillion by 2025. Agriculture liberalization helps in increasing the revenue generation thus doubling the farmer's income by 2022 according to Ashok Dalwai committee.

Best Answer: Ayush Dubey

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30. What is the Sagarmala project? What are its economic and strategic implications for India?

Introduction

In order to achieve port led development and develop coastal regions of country, government took up a unique initiative called Sagarmala project. It aims to exploit the Blue economy to achieve high growth and development of country.

Body

Components

- Port Modernization & New Port Development – extending the capacity of existing ports and developing new ports
- Port Connectivity Enhancement – improving port-hinterland connectivity, optimizing cost and time of cargo movement through multi-modal logistics solutions including domestic waterways
- Port-linked Industrialization – Developing industrial clusters close to ports and developing Coastal Economic Zones
- Coastal Community Development – Promoting sustainable development of coastal communities through skill development & livelihood generation activities, fisheries development, coastal tourism, etc.

Need for Sagarmala:

- India has a 7,517 km (4,670.84 miles) long coastline, 14,500 km (9,010 miles) of potentially navigable waterways, and strategic locations along major international maritime trade routes.
- Yet, the country has been unable to capitalize on its geography due to infrastructural and operational deficiencies.
- Data shows that despite its long coastline, India's coasts only contribute to 15 percent of national trade activity.
- For instance, the turnaround time (TAT) at major Indian ports in 2014-15 was about four days; the global benchmark is an average of 1-2 days.

Economic implications:

- Port development and modernization: New port infrastructure like better handling capacity, modernization etc will help improve the turnaround time of ships (From 2015-16 to 2017-18, it got reduced by 25%).
- Infrastructure- Development new infrastructure like new ports, road connectivity to ports, coastal economic zones (CEZs), multi-modal logistics parks etc.
- Reduced logistics cost- At present, logistics cost in the country is in the range of 14-16 per cent against 8-10 per cent in other countries. Sagarmala can help reduce these costs.
- Inter-connectivity: It leads to inter-connection between roadways, railways, water ways and airways, thus reducing the overall cost of transportation as well as improving connectivity.
- Employment: Provides employment opportunity to coastal area people and increase their standard of living. It is estimated to create an estimated 10 million new jobs (four million in direct employment).
- Development: Will help in development of regions around ports by increase in investment, new sectors presence like manufacturing, services etc.
- Efficiency: Will reduce the cost of transportation and make India a new transit hub. Developing rivers as inland waterways can also help save domestic logistics costs too.
- Export competitiveness- Sagarmala could help the country and industrial to gain competitive advantage compared to its neighbors. It is expected to boost India's merchandise exports to \$110 billion by 2025
- Power sector- The project aims to shift the movement of coal to the coastal route, which would cut down electricity costs by up to 35 percent, especially for coastal power plants in Andhra Pradesh and Karnataka, which receive coal by rail networks.
- Blue economy: Developed coastal infrastructure, livelihood development of coastal communities, exploitation of ocean resources will help improve India's Blue economy.
- FDI: It will also help in attracting foreign container companies to set up their facilities.

Strategic implications:

- Coastal security: It also enhances coastal security along with economic development.
- Check Chinese intrusion- The project is an effective way to counter China's Belt and Road Initiative (BRI) in the Indian Ocean region (IOR).

- ASEAN- With increasing ties with ASEAN countries, the importance of ports and port infrastructure further increases and Sagarmala can help address it.
- Efficiency: Will reduce in cost of transportation and make India a new transit hub.

Conclusion

Sagarmala project not only helps in port led development and trade but it will also enhance employment opportunity, increase foreign exchange earnings for country. The Britain ruled the world due to its Maritime power, India aiming for superpower status can utilize this opportunity to project its might among world countries.

No Best Answer

31. The Indian Railways is facing stiff competition from the domestic airlines and highways. What measures can be taken to make railways more competitive?

Introduction

Indian Railways has the fourth-largest rail network in the world after the United States, China and Russia. India's railway network is recognised as one of the largest railway systems in the world under single management.

Body

In the last few decades, Indian railways have seen a fall in passenger and freight traffic due to shifting preference to other transport modes such as roads and air. The Economic Survey noted how railway passenger business declined by an average of 0.26% every year in the five years ending 2017-18, while the number of domestic air passengers rose 10% annually.

Reasons for stiff competition from domestic airlines and highways:

- **Convenience:** Roads have become more convenient for people for short distance.
- **Fares:** Upper-class fares face competition from low-cost airlines and AC bus fares.
- **UDAN:** the regional air connectivity scheme has expanded airport capacity more than five times to handle a billion airline trips per year. This has attracted upper-class rail travellers.
- **Better Service:** Airline services are faster, safer and more reliable with high customer-centric services.
- **Better last mile connectivity:** provided by road transports.
- **Railways' freight rates:** are already higher than other modes of transport for several commodities.
- **Large Road network:** India's road traffic is being expanded to 2,00,000 km with a capacity to carry 80% of the country's goods traffic. Trucks will clock much higher mobility, further facilitated by the GST regime.

Issues with Indian Railways:

- **Efficiency:** Low efficiency of the Railways in terms of the human resources it employs, and their capacity.
- **Safety:** has been one of the biggest concerns in the Indian Railways system.
- **Delay:** Due to technical, maintenance and climatic reasons.
- **Centralized decision making:** Railway zones have very limited powers with regard to raising their own revenue. Therefore, they are unable to contribute more effectively towards improving Railways' revenue.
- **Inadequate carrying capacity:** Passenger trains utilise two-thirds of capacity and generate only one-third of revenues.
- **High freight tariff:** leading to getting out-priced in market.
- **Low Service quality:** as compare to Airlines and private bus services.
- **Limited Freight Basket:** The freight basket is limited to certain bulk commodities, and heavy dependence on coal transport poses a risk to the business.
- **A vicious cycle for Railways:** Poor finances of Railways had led to low investment in infrastructure. Low investment means Railways' infrastructure and services take a hit (resulting in low speed, delays, and safety issues). Poor infrastructure and services result in loss of remunerative business for Railways which leads to further deterioration of finances.
- **Capacity Constraints:** The rail network currently faces huge capacity constraints, and the high-density network (a network that connects metros) has already reached saturation.

Measures to be taken:

- Use of LHB coaches for better safety and comfort.
- 100% electrification of tracks to save fuel.
- Start new trains on busy routes to tap the demand.
- Rationalize railway traffic as per efficiency and economic feasibility.
- Improve pre-board facilities such as hassle-free booking, clean station platforms, coaches and toilets, standardised packaged food, trains running on time, and so on. Beautify Railway station and provide world-class passenger amenities such as waiting for lounge and high-speed internet.
- Provide for high-capacity, speedy, intercity passenger trains. Start more semi-high-speed train such as Humsafar, Tejas, Antodhaya and Uday.
- More dedicated freight corridors required.
- IR needs to perform as a corporate entity to carry the nation's freight and passengers adequately, efficiently and economically.
- Boost Non-Fare Revenues sources such as Rail Neer and Catering services. Can promote Train Branding which will include both external and internal advertising on trains.
- Integrate its rail network with other modes of transport and develop a multi-modal transportation network.

Conclusion

Passenger and Freight transportation is the backbone of any economy. As we are moving for Bullet Train and Hyperloop, we should also make Indian railways more efficient and productive as it is far too important and strategic for the nation for better economic growth.

No Best Answer

32. Examine the economic prospects of pipelines in India. What measures have been taken to expand pipeline networks in India? Examine.

Introduction

Transportation by pipelines is a rising development being preferred nowadays in India for cost-effective projects in various fields. Pipelines are most convenient, efficient and economical mode of transporting liquids like petroleum, petroleum products, natural gas, water, milk, etc. Even solids can also be transported through pipelines after converting them into slurry.

Body

Economic prospects of pipelines in India:

- **Extensive coverage and inclusion:** India has just completed its biggest city gas distribution (CGD) auction. This is expected to extend coverage to more than half of its 1.3 billion people across a third of the nation's area. This project aims to see 10 million homes linked to gas grids by 2020 and bring relief to smog filled cities.
- **Boost to the steel industry:** Steel pipe makers are set to become beneficiaries of India's \$10 billion push to expand its natural gas network with approx 12,500 kilometres of pipes within the next three to four years.
- **Domestic Business opportunity:** Low penetration of pipes, and government measures such as setting up the National Gas Grid and revamping the water and sanitation infrastructure using pipelines underground, provide a domestic business opportunity of more than 300 billion rupees (\$4 billion).
- **Reduced import costs:** While seeking to double the share of natural gas in the country's energy mix to 15 percent by 2030 and slashing emissions by a third, a gas-based economy helped by pipelines would help India be less reliant on crude oil imports by substituting the use of oil products in industrial and residential applications. A 10% replacement of liquid fuel into gas will reduce India's import bill by nearly \$3billion every year.
- **Foreign investment and domestic economy strengthening:** Several pipeline projects are providing opportunities of foreign investment and support, there by attracting global investments and domestic industry giants. For example: The Torrent Group is preparing to invest Rs 3,000 crores (US\$ 417 million) for installation of gas pipeline network in Uttar Pradesh. This gas pipeline network will be utilised for domestic, commercial and industrial consumers.
- **Transportation of solid materials and future prospects:** Nowadays solid minerals are being transported through pipelines too, cutting down on operating and transportation

costs considerably. Ex: Iron ore in form of slurry from Kudremukh to Mangalore port, Rock phosphate from Malton mines to Debari smelter plant in Udaipur etc. Dairy industries in many countries like New Zealand are efficiently using pipelines to transport milk. Suitable infrastructure can be used similarly in India.

- **Economical construction and maintenance:** Low energy consumption and low maintenance costs. Additionally they can be built in difficult terrains, under water etc.
- **Reduction in accidental charges and economic efficiency in the long run:** Pipelines are safe, accident-free and environmental friendly.
- **Reduces regional disparity and helps economic growth:** The far inland location of refineries like Barauni, Mathura, Karnal and gas based fertiliser plants at Jagdishpur and other places could be thought of only because of pipelines.
- **Lesser delivery costs:** Pipeline delivery comparatively immunizes against inflation of transportation costs. Also, natural gas is less costly when compared with other conventional fuels.
- **Reduction in subsidy expenditure:** Most importantly, the gas grid project would bring down government subsidy to LPG. Also, siphoning of cylinders to black market would come to an end, thereby reducing corruption and misuse of the same.

Measures taken to expand pipeline networks in India:

- Pradhan Mantri Urja Ganga project: The gas pipeline project aims to provide piped cooking gas to residents of Varanasi and later to millions of people in states like Bihar, Jharkhand, West Bengal and Odisha. According to GAIL, with the Urja Ganga project, 20 lakh households will get PNG connections.
- Different pipeline projects across the country:
 - Barauni to Guwahati Pipeline- The pipeline will pass through the Bihar, West Bengal, Sikkim & Assam;
 - North East Region(NER) Gas Grid-It will pass through Assam, Sikkim, Mizoram, Manipur, Arunachal Pradesh, Tripura, Nagaland and Meghalaya in a phased manner;
 - Kochi-Kootanad-Bangalore-Mangalore Pipeline (Phase-II): It will pass through Kerala and Tamil Nadu;
 - Ennore-Thiruvallur-Bengaluru-Puducherry-Nagapatinam-Madurai-Tuticorin Pipeline (ETBPNMTPL): It will pass through the State of Tamil Nadu, Andhra Pradesh & Karnataka.
- India has 16,000 km of gas trunk pipelines in operation, and 13,000 km more approved and in various stages of construction. The PNGRB has awarded licenses to build city gas distribution networks across the country, targeting districts that cover about 70 percent of India's population.
- The central government is promoting a gas based economy which needs a massive network of pipelines for transportation of natural gas to various corners of the country.
- City Gas Distribution (CGD) Network: CGD refers to transportation or distribution of natural gas to consumers in domestic, commercial or industrial and transport sectors through a network of pipelines. Recently, the Indian Prime Minister laid Foundation Stones of City Gas Distribution (CGD) Projects in 65 Geographical Areas (GAs) in 129 Districts.

- Public Utility Status granted to CGD Projects by Ministry of Labour and Employment.

Challenges:

- High initial costs and inability to increase capacity once the pipeline is laid.
- Delays due to policy failure, non-cooperation of State Governments, or apprehensions of common citizens to adapt to pipeline supply.
- Difficulty in repair and leakage detection.

Conclusion

Pipelines have relieved the increasing pressure on the existing surface transport system and can go a long way as the future of transportation of essential materials, especially as India is intending to move towards a gas-based economy by increasing the share of natural gas in India's energy basket from the current 6-7% to 15% by 2022. A robust and efficient policy for the same will not only ensure this, but also help in the overall economic growth of the country.

Best Answer: Jean Grey

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33. What is the BOT investment model? Is it suited for India's infrastructure sector? Critically comment.**Introduction**

BOT Investment model is a Public Private Partnership model where the private partner is responsible to design, build, operate (during the contracted period) and transfer back the facility to the public sector. Role of the private sector partner is to bring the finance for the project and take the responsibility to construct and maintain it. In return, the public sector will allow it to collect revenue from the users.

Body**Advantages of BOT Investment model:**

- **Discreet asset:** It is used to develop a discrete asset rather than a whole network and is generally entirely new or Greenfield in nature (although refurbishment may be involved).
- **Advantages of BOT for governments:** Include reduced development and infrastructure budget and transfer of risk to the concession company.
- **Advantages for the concession company:** Include better management of many construction risks, and possible countering of any adverse effects by benefits during operation.
- **Efficiency:** BOT provides a mechanism and incentives for enterprises to improve efficiency through performance-based contracts and output-oriented targets.
- **Competitive bidding:** The projects are conducted in a fully competitive bidding situation and are thus completed at the lowest possible cost.

Disadvantages of BOT Investment model:

- **Higher than debt cost:** There is a profit element in the equity portion of the financing, which is higher than the debt cost. This is the price paid for passing of the risk to the private sector
- **Long duration:** It may take a long time and considerable up front expenses to prepare and close a BOT financing deal as it involves multiple entities and requires a relatively complicated legal and institutional framework. There the BOT may not be suitable for small projects
- **Institutional framework:** It may take time to develop the necessary institutional capacity to ensure that the full benefits of BOT are realized, such as development and enforcement of transparent and fair bidding and evaluation procedures and the resolution of potential disputes during implementation.

Model that suits India’s infrastructure sector:

The Hybrid Annuity Model (HAM):

- HAM is a mix of BOT Annuity and EPC (engineering, procurement and construction model) models. As per the design, the government will contribute to 40% of the project cost in the first five years through annual payments (annuity). The remaining payment will be made on the basis of the assets created and the performance of the developer.
- Example: NHAI in India. The private player has no role in the road’s ownership, toll collection or maintenance (it is taken care of by the government)
- Hybrid annuity means the first 40% payment is made as fixed amount in five equal instalments whereas the remaining 60% is paid as variable annuity amount after the completion of the project depending upon the value of assets created.
- Advantage of HAM is that it gives enough liquidity to the developer and the financial risk is shared by the government.

Model	Financing	Revenue collection	Operation and maintenances
BOT model	Private entity	Private entity	Private entity
EPC model	Government	Government	Government

HAM	By private and Govt	Government	Private entity
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Conclusion

HAM is a good trade-off, spreading the risk between developers and the Government. Moody's also notes that the improving credit profiles of infrastructure developers are increasing their capacity to participate in PPP projects. However, their access to funding remains a key concern, with banks constrained by sector-specific exposure limits and existing stressed assets in their infrastructure portfolios.

Best Answer: ias_2019

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34. How is artificial intelligence making lives easier? Illustrate.

Introduction

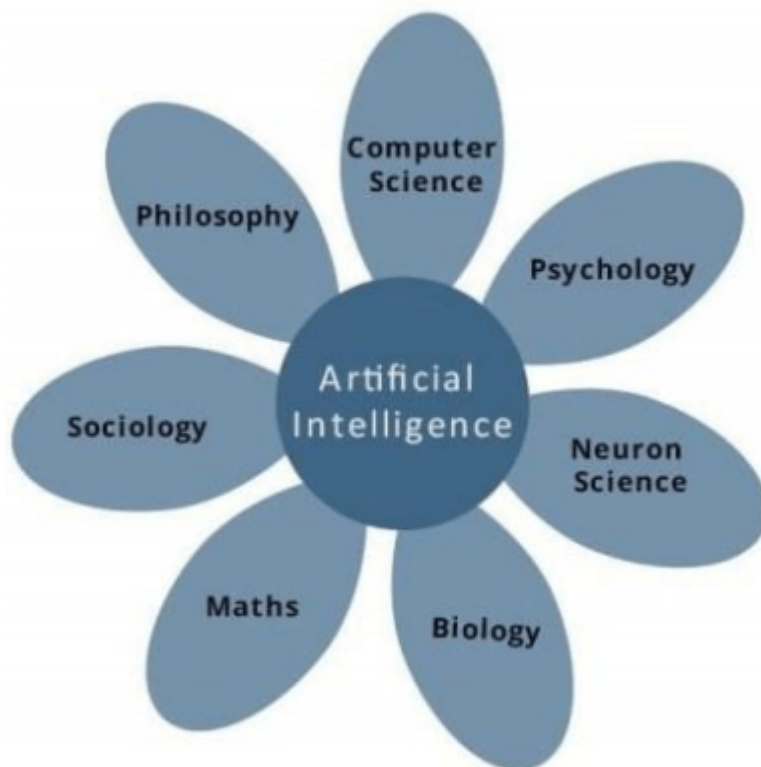
Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks.

Body

Artificial intelligence is making human lives easier and better in following ways:

Most AI examples that you hear about today – from chess-playing computers to self-driving cars – rely heavily on deep learning and natural language processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data.

AI applications:



- AI automates repetitive learning and discovery through data. But AI is different from hardware-driven, robotic automation. Instead of automating manual tasks, AI performs frequent, high-volume, computerized tasks reliably and without fatigue.
- AI adds intelligence to existing products. In most cases, AI will not be sold as an individual application. Rather, products you already use will be improved with AI capabilities, much like Siri was added as a feature to a new generation of Apple products.
- AI adapts through progressive learning algorithms to let the data do the programming. AI finds structure and regularities in data so that the algorithm acquires a skill: The algorithm becomes a classifier or a predictor.
- AI achieves incredible accuracy through deep neural networks – which was previously impossible. For example, your interactions with Alexa, Google Search and Google Photos are all based on deep learning – and they keep getting more accurate the more we use them.
- AI gets the most out of data. When algorithms are self-learning, the data itself can become intellectual property. The answers are in the data; you just have to apply AI to get them out.
- Health Care: AI applications can provide personalized medicine and X-ray readings. Personal health care assistants can act as life coaches, reminding you to take your pills, exercise or eat healthier.
- Manufacturing: AI can analyze factory IoT data as it streams from connected equipment to forecast expected load and demand using recurrent networks, a specific type of deep learning network used with sequence data.

Issues with Artificial Intelligence:

- There is a lot of uncertainty about the kind of AI we may one day reach that would achieve human-level intelligence or possibly more.
- In the near term AI serves as a tool that can magnify the amount of power an individual has. For example, someone could buy thousands of cheap drones, attach a gun to each of them, and develop AI software to send them around shooting people. If the software was good enough this could result in far more destruction than a normal terrorist attack.
- In the short term, there is a threat being posed too many job markets in the form of automation, and for many automation problems.
- Gap between developed and developing countries to increase-due to skill difference.

Conclusion

The power of artificial intelligence that unintentionally causes destruction and damage cannot be ignored. What will help us control it better is research and in-depth study of the importance of artificial intelligence. Research alone can control the potentially harmful consequences of AI and help us enjoy the fruit of this innovation.

Best Answer: Ravi Kishore Boddu

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35. What are the applications of nano-technology in the medical field?**Introduction**

Nanotechnology is science, engineering, and technology conducted at the nanoscale, which is about 1 to 100 nanometers. Physicist Richard Feynman is the father of nanotechnology.

Body

Nanomedicine is an application of nanotechnology which works in the field of health and medicine. Nanomedicine ranges from the medical applications of nanomaterials and biological devices to nanoelectronic biosensors and even possible future applications of

molecular nanotechnology such as biological machines. Some applications are discussed below.

- - **Drug Delivery:** Nanoparticles are used for site-specific drug delivery. In this technique, the required drug dose is used and side-effects are lowered significantly as the active agent is deposited in the morbid region only. Targeted medicine reduces drug consumption and side-effects. This highly selective approach can reduce costs and pain to the patients.
 - **Tissue Engineering:** With the help of nanotechnology, damaged tissue can be reproduced or repaired. These artificially stimulated cells might revolutionize the transplantation of organs or artificial implants.
 - **Antibacterial Treatments:** Researchers are developing a technique to kill bacteria using gold nanoparticles and infrared light. This method may lead to improved cleaning of instruments in hospital settings.
- **Wound Treatment:** Researchers have demonstrated a bandage that applies electrical pulses to a wound using electricity produced by nanogenerators worn by the patient.
- **Cell Repair:** Nanorobots could be programmed to repair specific diseased cells, functioning in a similar way to antibodies in our natural healing processes.
- - **Cancer Treatment:** Nanoparticles have a high surface area to volume ratio. This allows for many functional groups to be attached to a nanoparticle, which can seek out and bind to certain tumour cells. Iron nanoparticles or gold shells are finding important application in cancer treatment.
 - **Imaging:** In vivo imaging is another area where tools and devices are being developed. Using nanoparticle contrast agents, images such as ultrasound and MRI have a favourable distribution and improved contrast.
 - **Blood purification:** In contrast to dialysis, which works on the principle of the size-related diffusion of solutes and ultrafiltration of fluid across a semi-permeable membrane, the purification with nanoparticles allows specific targeting of substances. Additionally larger compounds which are commonly not dialyzable can be removed using Magnetic microparticles.
- **Medical Device:** Neuro-electronic interfacing is a visionary goal dealing with the construction of nanodevices that will permit computers to be joined and linked to the nervous system.
- **Gene sequencing:** has become more efficient with the invention of nanodevices like gold nanoparticles, these gold particles when tagged with short segments of DNA can be used for detection of genetic sequence in a sample.
- **Stem Cell Technology:** Nanotechnology has made an excellent contribution to the field of stem cell research. For example, magnetic nanoparticles (MNPs) have been successfully used to isolate and group stem cells.

Conclusion

Advancement in the field of nanotechnology and its applications to the field of medicines and pharmaceuticals has revolutionized the twentieth century. A nanotechnology is a valuable tool for the prevention, diagnosis and treatment of human diseases. The medical area of nanoscience application has many projected benefits and is potentially valuable for all human races.

Best Answer: Redeemer911

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36. How can robotics be a game changer for agriculture? Discuss.

Introduction

Agriculture is quickly becoming an exciting high-tech industry, advancing the production capabilities of farmers. The robotics technology coupled with digital mechanization possesses potential in bringing positive transformation across agricultural landscape globally and especially in India in the backdrop of challenges like lack of favourable terms of trade, vagaries of monsoon, sluggish technology adaptation, productivity per yield etc.

Body

How can robotics be a game changer?

- **Precision Agriculture:** Weed control using robotics and machine learning, to pinpoint the application of fertilizers and herbicide. Field tests have reported using only 10 percent of the herbicide needed in the past. The concept can be reversed to precisely apply fertilizer to only desired plants, thereby reducing waste while optimizing yields.
- **Solution to lack of labour:** Robotics for agricultural activities like fruit picking, harvesting etc. For example: Large scale Orange harvesting with agricultural robots in France and USA. Example: Virgo, the robotic harvesting system.(Source-Google)



- **Full field capacity work:** The robots do not get sick or tired and they do not need the time off, they offer fewer errors at higher speeds, and the higher quality products can be sensed by the machines accurately.
- **Safety of farmers and consumers:** The robots can protect the human workers from the harmful effects of handling the chemicals by hand and through the system of high spraying, and they can reduce up to 80% of a farm's use of pesticides, avoiding contamination.
- **High productivity:** Robotics mechanism closely mimics the human method of farming, but at a much higher productivity level. Increase in farmers' income per yield and reduction in all round costs are observed.
- **Enables alternate employment and additional source of income:** Due to robotic farming, lot of time is saved for the farmers, and they can engage in alternate occupations, thus earning additional income.
- **Other applications:** Nursery planting, crop analysis, animal husbandry, dairy farming, drone service, harsh terrain resilient farming etc.

Need for robotics in Indian agriculture:

- **Growth:** According to NITI Aayog's report, Agriculture and allied sector is critical to India's growth story and to achieve and maintain an annual growth rate of 8 –10% for the Indian economy, agriculture sector must grow 4% or higher rate. Adopting technological strategies seems to be the way forward.
- **Enhance productivity:** The sector suffers from poor resource utilisation, with the production quantum and productivity still being quite low. For example, yield of cereals, comprising a major share of food grain production, in terms of magnitude is significantly lower than that of China and the USA. Technology adoption and efficient resource usage like robotics, AI, Digital mapping etc in these two countries are far higher, thus resulting in higher yields.
- **Economic strengthening:** According to CB Insights, agricultural tech start-ups in India have raised over USD800million in the last 5 years to bring AI and robotics to agriculture

and are helping solve pressing issues across the agriculture value chain which is valued to be at USD2.6 billion by 2025.

- **Reduced costs:** Agri-bots being used in several regions in India which tend to crops, harvesting, weeding etc can reduce fertilizer cost up to 90% and eliminate human labour.
- **Attracting youth:** Robotics in agriculture can succeed in bringing and retaining the youth population of our country.

Challenges:

- The capital-intensive nature of Robotics.
- High cost of procuring imported hardware components as well as training personnel.
- Unavailability of skilled labour and sluggish adaptation of technology: Most of Indian agriculture is carried out in the rural dominated regions which entail difficulty in convincing the farmers to trust the technology over traditional farming.
- Repair and maintenance becomes an issue, especially in India, where reach of AI knowledge has not penetrated across the country.
- Loss of various traditional, yet effectively resilient methods suitable for Indian agriculture.
- Substitution of technology may put farmers out of their jobs and render difficulties to the already suffering state of unemployment.

Examples of Robotics in Indian Agriculture: (These are for your information)

- PAAMA Agrico under Made-in-India Agri-Equipments has designed the world-class soil titling blades used in rotovators and cultivators. It enables a Robot to weld blades enabling the precision function – ensuring uniformity in production while facilitating repeatability function each time.
- GRoboMac: The working of this robot has been designed in such a way that the computerized vision detects and locates the precise 3D coordinates of the bloomed cotton from the images of the cotton plant. A robotic arm uses these coordinates to pick the cotton and the arm, then uses a vacuum for precision picking of cotton and avoids picking any other contaminant.

Conclusion

Technological advancements in agriculture are an important element to fodder growth and engaging in robotics is an indispensable technique of driving this. NITI Aayog's Statement of Intent (SoI) to develop and deploy AI to provide real-time advisory to farmers in Aspirational districts is laudable at this juncture and should be extended across the length and breadth of the country.

Best Answer: Ayushi Singh

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37. What is geo-tagging? What are its applications? Discuss.

Introduction

Geotagging– It is the process of adding geographical identification like latitude and longitude to various media such as a photo or video. Geotagging can help users find a wide variety of location-specific information from a device. It provides users the location of the content of a given picture.

Note: **Geomapping** a visual representation of the geographical location of geotagged assets layered on top of map or satellite imagery

Body

Applications of geo-tagging:

- **Social media:** Users can geotag photos that can be added to the page of the location they are tagging. Users may also use a feature that allows them to find nearby Facebook friends, by generating a list of people according to the location tracker in their mobile devices.
- **Daily updates:** The increasing numbers of cell phones with built-in GPS facilities are capable of geo-tagging a photograph as its being shot.
- **Efficiency:** Allows projects in remote and conflict-affected locations to be easily and accurately located, managed and validated.
- **Health system:** Used as a Monitoring Tool in Large Scale Public Health Projects it enable to capture the location on the mobile device it also allows users to read this location for varied purposes.
- **Infrastructure:** Geo-tagging of assets will ensure better monitoring, recording, and terrain mapping for future development works.
- **Public works:** Easy identification of assets created under MNREGA, such information can be utilized for creation of additional developmental works on existing assets.
- **Specific advertisements:** advertisements relevant to particular area can be customized according to targeted audience, place and product

Disadvantages of geo-tagging:

- **Information can be sold to advertisers:** Location services and geo-tagging provide information that may be sold on to advertisers, who can use this data to provide you with targeted advertising based on your position – and loads of it.
- **Private details:** Unintentionally revealing the location of yourself or your loved ones to those who have legitimate reason to assume that you or they are somewhere else. Showing up on Face book drinking cocktails in the Bahamas when you're supposed to be at work is at the milder end of this spectrum.
- **More threats:** Giving enough information about your current whereabouts to allow malicious parties to target you or your loved ones for assault, or worse.
- **Easy targets:** Providing geo-tagging metadata that could allow outsiders' access to your children or vulnerable members of your family or social circle.

Conclusion

Government agencies such as Forestry, Archaeology and Tourism in the centre as well as states are also making good use of this technology. With increased intervention, the application geo-tagging is changing the development landscape in India by bringing in more transparency and accountability.

No Best Answer

38. What are some of the breakthrough innovations carried out by Indian scientists? Discuss.

Introduction

Very less is known to world about India's contribution towards Scientific and technological innovations. The greatness of Indian innovations goes back to ancient India which was known for rich scientific contributions right from the use of zero, precise calculation of eclipses, concept of atom, to "Shushruta Samhita" involving complex surgery and "Charak" explicitly describing diseases, their causes and modes of treatment.

Body

Break through innovations carried out by Indian scientists:

- Brahmagupta was the first to give rules to compute with zero.
- Varahamihira's main work in the book Pancha-Siddhantika on mathematical astronomy.
- Susrutha is widely regarded as the most ancient surgeon of the world. He was the inventor of the art of Plastic surgery and is regarded as the 'Father of Plastic Surgery'.
- Ajay V. Bhatt is an Indian-American computer architect who helped define and develop several widely used technologies, including AGP (Accelerated Graphics Port), PCI Express, Platform Power management architecture and various chipset improvements. He is mostly famous for the invention of the USB technology on which the modern storage devices such as pendrive works.

- Chemistry professor Rajagopalan Vasudevan devised a way to transform common plastic litter into a substitute for bitumen — the main ingredient in asphalt used for road construction. Known as the “Plastic Man,” Vasudevan’s indigenous invention has already paved 3,000 miles (5,000 kilometers) of plastic thoroughfares in at least 11 Indian states.
- Narinder Singh is an Indian-born American Sikh physicist known for his work in fibre optics. He was named as one of the seven ‘Unsung Heroes’ by Fortune magazine in their ‘Businessmen of the Century’ issue. His innovations in the technology of fiber optics changed the communication industry. He is also known as “Father of Fiber Optics”. He was officer in Indian Ordinance before moving to USA.
- Meghnad Saha is known for the thermal ionisation of elements, and it led him to formulate what is known as the Saha Equation. This equation is one of the basic tools for interpretation of the spectra of stars in astrophysics. By studying the spectra of various stars, one can find their temperature and from that, using Saha’s equation, determine the ionisation state of the various elements making up the star. It is used in studying the physical and chemical state of stars.
- Satyendra Nath Bose was an Indian physicist specializing in mathematical physics. He is best known for his work on quantum mechanics in the early 1920s, providing the foundation for Bose–Einstein statistics and the theory of the Bose–Einstein condensate.
- J C Bose, pioneered the study of radio and microwave optics, made important contributions to the study of plants and laid the foundation of experimental science in the Indian sub-continent. He was the first person to use semiconductor junctions to detect radio signals, thus demonstrating wireless communication for the first time.
- Dr. Suryasarathi Bose, Assistant Professor of Department of Materials Engineering and a team invented a water purifying system that could even eliminate harmful bacteria at a nanoscale level.
- A non-invasive device that can measure heart and lung, called the Fibre Bragg Grating Heart Beat Device, was invented by S Asokan, Professor at Department of Instrumentation and Applied Physics and his team. The device simply needs to be wrapped around a person’s chest, while the sensors detect cardiac activities, measure blood pressure, count blood glucose levels, and monitor respiration. Made of an optical fibre sensor, this device can easily help detect heart conditions early.
- In 2012, Sathees C Raghavan, associate professor with IISc’s biochemistry department and his team developed a molecule inhibitor, SCR7, which could revolutionise cancer treatment.
- Another twist to the water purifier, this innovation by Professor Vasant Natarajan, from the Department of Physics is low cost and does not require membranes or electricity. According to Natarajan, this device could purify all kinds of water – sea, bore well, ponds, even rain water – into drinkable water, and produce 1.5 litres out of 3 litres of impure water.
- Lastly, a name that needs no introduction. He is probably the greatest scientist of Modern India. Nicknamed as ‘Missile Man’. For four decades he worked as a scientist and science administrator, mainly in DRDO and ISRO. His work on the development of ballistic missile and launch vehicle technology made it possible for India to develop its defense and be independent of foreign Tech. He also played a prominent role in India’s Pokhran-II nuclear tests in 1998 for which he was also awarded Bharat Ratna.

Conclusion

This legacy of innovations needs to be further taken forward because innovation is the one and only medium that can provide solutions for the present and emerging problems in the years to come. Government has taken number of steps to encourage development of scientific temper through schemes such as AIM (Atal Innovation Mission), INSPIRE and revive the traditional Indian knowledge through schemes such as AYUSH mission.

No Best Answer

39. What are the strategic implications of indigenising space technology? Examine.

Introduction

Space technology has become an essential part of daily life and it's hard to picture what a life without space tech would be like. Vast is the range of spin-off benefits derived from the advancement of space technology such areas as mapping the natural resources through remote sensing, telecommunication, television and weather forecasting.

Body

Indian Space Agency ISRO is making desperate attempts to indigenizing current space technology. It is developing its rockets, cryogenic engines, navigation and communication satellites.

The Indian space scientists have contributed a lot to the indigenization of space technology. Some remarkable achievements in recent times have been the launching of CHANDRAYAAN-2, A-SAT, IRNSS (NavIC), MANGALYAAN, GSLV Mark III to name a few.

The strategic implications of indigenising space technology:

- **Autonomy:** Indigenization leads to less dependency on other countries to launch communications satellites. Dependency on foreign suppliers produces helplessness like the high cost of maintenance and inventories and the danger of deficit of spares later in the life cycle. Dependency curbs strategic autonomy.
- **Enhanced Global image:** Advancement in indigenous space technologies leads to the enhanced global image of the country.
- **Data Security:** Sensitive data such as military operations will be limited to the home country only. Eg. India will now use its navigation system NavIC instead of GPS made by the US.
- **Real-Time Data:** Country will get real-time data for weather and military purposes without relying on other countries which may have vested interests.

- Improved bilateral relations: Indigenization of space technology improves bi-lateral relation with countries who don't have these advanced technologies and want to launch their satellites.
- **Support to Neighbouring Countries:** India can provide telecommunication and navigation services beyond Indian boundaries catering to the population of South East Asia to the Middle East.
- **Recognition in global forum:** Self-sufficiency of information and indigenous space technology will give voice and recognition to the country on global forums.
- Commercial Gains: Till now, India has paid commercial rates to other countries to launch its communications satellites. Now India can commercially produce and even launch a satellite for other countries and can in-cash the indigenously developed world-class capabilities.
- Suitability with local needs: Technology can be developed as per local and regional needs. Ex. NavIC can be used in regional languages, unlike GPS which has limited language options.

Conclusion

It is a well-established that no nation can become hopeful to attain a great power status without being practically self-reliant in space technology. In the long run, given the geopolitical realities, 100% Indigenization of space tech has to be a core strategic policy for India.

Best Answer: ias_2019

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40. Critically assess the performance of India's defence PSUs.

Introduction

Indian defence sector aims to promote self-reliance, indigenisation, developing capabilities for export, transfer of technology and domestic R&D. GOI has thus established nine Defence Public Sector Undertakings (DPSUs) whose responsibility is to provide the Armed Forces state-of-the-art equipments and at the same time enhance country's self-reliance in defence production.

Body**Positive performance of the Defence PSUs (DPSUs):**

- **Self-reliance:** DPSUs have successfully delivered equipments to several defence and national projects in the recent times.
- Hindustan Aeronautics Limited (HAL) delivered the Orbiter Craft Module Structure to ISRO Satellite Centre (ISAC) for the Mars Orbiter Mission (Mangalyaan).
- Bharat Dynamics Limited (BDL) has integrated LRSAM missile for Indian Navy and two LRSAM Missiles have been test fired successfully from Indian Warships.
- Mazagaon Dock Shipbuilders Limited (MDL) currently is constructing Missile Destroyers, Stealth Frigates (P-15 B destroyers and four P-17A stealth frigates) and Scorpene Submarines (INS Kalvari, INS Vela).
- Garden Reach Shipbuilders and Engineers Limited (GRSE) is working on 14 warships, including two Antisubmarine Warfare Corvettes (ASWC), eight Landing Craft Utility (LCU) ships and four Water Jet Fast Attack Crafts (WJFAC).
- **Undertakes construction of allied items of defence equipments and Atomic Energy for the country:**
 - Bharat Electronics Limited (BEL) has core competencies in areas of Radars & Weapon Systems, SONARs, Communication, EWS, Electro-Optics and Tank Electronics.
 - Goa Shipyard Limited (GSL) is well-known for designing indigenously and building sophisticated high technology ships for Indian Defence Forces and other varied clients including export markets.
 - Hindustan Shipyard Limited (HSL) has plasma cutting machines, steel processing and welding facilities, material handling equipment, cranes, and logistics and storage facilities.
 - **Economic contribution:** 41 Ordnance Factories and 9 DPSUs in our country contributing to more than Rs.58000 crores approx. in defence production every year. Defence Public Sector Undertakings have achieved the turnover of Rs.45776 crores in 2018-19.

However, recent reports including by the CAG in 2016, provide a disappointing picture in several aspects related to DPSUs:

- **No considerable reduction in import:** India ranks the highest in import of defence equipment, spending annually on an average about \$3.6 billion. Only about 35% of defence equipment is manufactured in India, mainly by the PSUs. Moreover, even when defence products are manufactured domestically, there is a large import component of raw material at both the system and sub-system levels.
- **Lack of notable contribution to self-reliance:** Except for missilery, communication systems and some low technology items, DPSUs have not contributed notably to self-reliance in defence production. Its production profile reveals that most of them are over-dependent on external sources for the production needs, and have a very low labour productivity level.

- **Delay in completion:** CAG report showed that inordinate delay in supply of critical weapons and equipment had hampered the modernisation and capability enhancement plan of Indian Army, impacting the defence preparedness.
- **Financial implications:** The delay had financial implications towards loss of interest on payments made to DPSUs. Example: Delay in critical equipment like Akash missile system and a weaponised version of the Advanced Light Helicopter, suffered a loss of Rs 1,931 crores on account of accrued interest on advance paid to the DPSUs.
- **Low accountability:** The absence of accountability and the presence of political interference are high. For example, BEML's indigenised Bofors howitzers project went into cold storage due to political compulsions in the late 1980s.
- **Low Research and Development capacity and low exports.**

What has been done to address these shortcomings?

- FDI Policy has been revised and under the revised policy, FDI is allowed under automatic route up to 49% and beyond 49% through Government route.
- The Defence Products List for the purpose of issuing Industrial Licenses (ILs) under IDR Act has been revised so as to reduce the entry barriers for more than 8000 MSMEs which are among the vendor base of OFB & Defence PSUs supplying various items to them.
- An innovation ecosystem for Defence titled Innovations for Defence Excellence (iDEX) aimed at creation of an ecosystem to foster innovation and technology development in Defence and Aerospace to carry out R&D.
- NITI Aayog and the NSAB recommended a restructuring of all defence PSUs under a single body that can be governed by a different ministry, like the Ministry of heavy industries and public enterprises.
- Several projects have now been kept on a competitive basis, in which both PSUs and private industry are participating.

Way forward:

- **Facilitation:** A directory of credible defence manufacturers should be made available to all the defence procurement agencies and foreign producers to locate potential Indian partners for collaboration.
- As suggested by Kelkar committee, government should identify certain firms based on their technical, managerial and financial strength as "champions" ("Raksha Udyog Ratna") irrespective of being private players.
- Focus more on indigenous defence technology development rather than on development only by PSUs, by appropriate funding of researches and hiring skilled manpower by DRDO and other state and private owned entities in defence.
- **Private sector:** Treat them as equal partners and offer them big projects to boost their capabilities ensuring adequate transparency.

Conclusion

Defence industry is highly technology driven and it is the private sector that adapts itself better to rapidly changing technology. 'Make in India' for defence can be encouraged with equal help and advanced technical know-how of the private players along with the combination of public enterprises to reap out the best of both sides.

Best Answer: Redeemer911

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41. What is the status of research, development and innovation in Indian universities. What suggestions would you give to improve the situation?

Introduction

India is spending stagnant of 0.6 to 0.7 in terms of percentages of GDP on research and development according to economic survey. It suggested for doubling national expenditures on R&D. According to Times Higher Education (THE) Emerging Economies University Rankings, 49 institutions have made it to the list. Of these, 25 institutions have been included in the list of top 200 universities.

According to WIPO, India is the seventh largest patent filing office in the World.

Body

Status of research and development in Indian universities:

- India has no firms in five of the top ten R&D sectors as opposed to China that has a presence in each of them.
- About three-fifths of government's investment in R&D is spread over the key government science funding agencies like Atomic Energy, Space, Earth Sciences, Science and Technology and Biotechnology.
- Government expenditure on R&D is undertaken almost entirely by the central government.
- The survey also pointed out that there has been an increase in the number of enrolments in Ph.D with 1.26 lakh students.
- The gross expenditure on R&D (GERD) was mainly driven by the government sector with central government accounting for 45.1 %, state governments 7.4 %, public sector industries 5.5 % and institutions of higher education 3.9 %. The private industry accounted for the balance 38.1 %.

- The public sector R&D was led by defence related industries and fuel industry, while the private sector R&D was dominated by drug and pharmaceuticals and transportation.
- India topped the list with regard to the government's participation in R&D but hit the bottom in terms of participation of institutions of higher education.
- Women's participation in extra mural R&D projects has increased significantly from a mere 13 % in 2000-01 to 29 % in 2014-15.
- Only 15 researchers per 100,000 people, putting India among the bottom five countries on this yardstick. Not only is the quantum of research poor, but also the quality of research.

Status of innovations in Indian universities:

- India secured 52nd rank in global innovation index.
- This list includes 127 countries ranked on parameters like infrastructure, market sophistication, business sophistication, institutions, and human capital and research.
- Judging the innovative capacities of India is that many innovations of the informal sector go unnoticed.
- India does not have a technology transfer legislation that would enable the transfer of know-how from university research labs to the private sector for commercialization.
- Many of India's innovations are not easily captured in indicators. Bangalore, for example, ranks at 65 among the top clusters in the world. Since the city's innovation is based on software, it does not show up in patents and publishing.

Measures to improve situation:

- To improve the quality of research institutes, for the promotion of technology business incubators (Atal Incubation Centres) and research parks that promote innovative ideas until they become commercial ventures.
- Atal Tinkering Labs ensure that dedicated workspaces are created for students to innovate and develop ideas that will go on to transform India
- Government procedures and approvals for scientists and researchers have been placed online and made transparent, thereby assuring "Ease of Doing Science".
- Unnat Bharat Abhiyan 2.0 to help bring transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India.
- Ucchar Avishkar Yojana (UAY), Ramanujan Fellowship Scheme, the Innovation in Science Pursuit for Inspired Research (INSPIRE) Faculty scheme and the Ramalingaswami Re-entry Fellowship, Visiting Advanced Joint Research Faculty Scheme (VAJRA), GIAN, can act as a catalyst in leveraging the scientific diaspora.
- RUSA, RISE, IMPRINT and Institutions of eminence are some other steps taken by Central Government to enhance the quality and competitiveness of higher educational institutions.

Conclusion

Research and development, innovations are important at all stages of development; specifically, the creation and diffusion of technologies are important for economic growth and welfare across all economies.

Best Answer: Ayush Dubey

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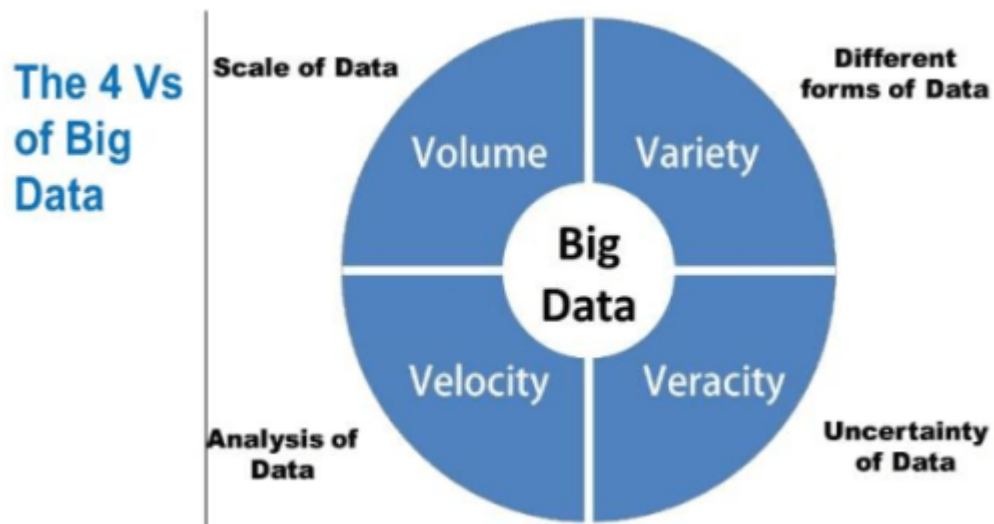
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42. What is Big Data? What are its applications? Discuss.

Introduction

Big data is a term for data sets that are so large or complex that traditional data processing application software is inadequate to deal with them. It refers to the use of predictive analytics, user behaviour analytics, or certain other advanced data analytics methods that extract value from data.

Body



Applications:

Governance:

- Big data can be analysed for targeted delivery of schemes, maintain a record of beneficiaries, analyse the response of the electorate to policies, predict future trends and demands of the population
- Patterns of investment, savings and expenditure can be revisited with changing time and government can instil such changes in its policies
- Geo-tagging in MGNREGA can help analyse the effectiveness of the policy geographically and bring in required changes
- The Digital India and Smart Cities initiatives of the government also include efforts to utilise data to design, plan, implement, manage, and govern programmes.

Businesses:

- Help to understand customers profile and needs, keep centralized data of sales, maintain the individual history of each customer and deliver customized services.

Antibiotic Resistance

- Big data can provide insightful information about the unregulated sale of Antibiotics without prescription. The data generated can be used for developing statistical models to show the relationship between antibiotic consumption and associated resistance.

Urbanisation

- Massive amounts of data generated by cities can be used to improve infrastructure and transport systems as Singapore has done.

Agriculture

- **Seed Selection** – Big-data businesses can analyse varieties of seeds across numerous fields, soil types, and climates and select the best.
- **Weather** – Advanced analytics capabilities and agri-robotics such as aerial imagery, sensors help provide sophisticated local weather forecasts can help increasing global agricultural productivity over the next few decades.
- **Insurance:** Crop-related ground data helps crop insurance companies for accurate assessment of risk and speedy settlement of claims.

Science and Technology:

- Research data can be captured at more depth and analysed in a better way. For example, data at Large Hadron Collider for atomic research. In future we are moving to the Internet of Things which will be based on machine-to-machine communication and each machine will have several Gigabytes of data about itself and others for simulating processes.

In social surveys also, now we can capture a larger sample of the population for evaluating trends and undercurrents. The use of information technology, open-source data, and proper governance will help in improving human development indices.

Conclusion

Big Data, Artificial Intelligence and Internet of things are going to change the world forever. Actively engaging policymakers and researchers is crucial to bring in cross-sectoral transformation.

Best Answer: Just Bring it...

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43. What are the concerns over the use of genetically modified (GM) products? Do you find these concerns relevant? Haven't many other countries embraced GM products? Critically comment.

Introduction

Genetically modified Products contain genomes which are engineered in the laboratory to favour the expression of desired physiological traits or the production of desired biological products.

Body

GMOs produced through genetic technologies have become a part of everyday life, entering into society through agriculture, medicine, research, and environmental management. However, while GM products have benefited human society in many ways, some disadvantages exist; therefore, the production of GM Products remains a highly controversial topic in many parts of the world.

Concerns over the use of genetically modified (GM) products:

There are unknown consequences of altering the natural state of an organism through foreign gene expression. After all, such alterations can change the organism's metabolism,

growth rate, and/or response to external environmental factors. These consequences influence not only the GMO itself but also the natural environment in which that organism is allowed to proliferate. Potential health risks to humans include the possibility of exposure to new allergens in genetically modified foods, as well as the transfer of antibiotic-resistant genes to gut flora.

Area Of Concern	Relevance
Health	They can have harmful effects on the human body. It is believed that consumption of these genetically engineered foods can cause the development of diseases which are immune to antibiotics.
Environment	This GM method can cause damage to other organisms that thrive in the environment and can create ecological imbalances. The risks of “tampering with Mother Nature”.
Genetic	Genetic changes will become permanent and irreversible with times, and undesirable and uncontrolled mutations can occur.
International Trade	With the increase of GM Products, developing countries would start depending more on industrial countries because it is likely that food production would be controlled by developed countries in the time to come.
Sustainability	The evolution of resistant pests and weeds termed superbugs and superweeds is another problem. Resistance can evolve whenever selective pressure is strong enough. This can cause the evolution of resistant insects in a few years and nullify the effects of the transgenic.
Religious	Many religious and cultural communities are against such foods because they see it as an unnatural way of producing foods. Many people are also not comfortable with the idea of transferring animal genes into plants and vice versa.
Awareness and Labeling	Manufacturers do not mention on the label that foods are developed by genetic manipulation because they think that this would affect their business, which is not a good practice.

Some benefits of GM Products:

Some GM Products:

- GM maize
- GM soybeans
- GM potatoes
- GM rice
- GM cotton
- GM peas
- GM Cow

- Increased crop yields.
- Reduced costs for food or drug production.
- Reduced need for pesticides.
- Enhanced nutrient composition.
- Enhanced food quality and better test.
- Resistance to pests and disease.
- Greater food security,
- Medical benefits to the world's growing population.
- Increase the yield of animals for milk and meat production.
- Decrease susceptibility to disease in animals.
- Allowing plants to grow in conditions where they might not otherwise flourish.
- Increased shelf life and hence there is less fear of foods getting spoiled quickly.
- Growing food free from chemicals and pesticides.

The response of other countries towards embracing GM:

The way governments have regulated GM foods varies. In some countries, GM foods are not yet regulated. Countries which have regulatory provisions for GM foods usually also regulate GMOs in general, taking into account health and environmental risks, as well as control- and trade-related issues (such as potential testing and labelling regimes).

- About 90 per cent of the corn, cotton, and soybeans planted in the United States were GM.
- The EU allows for the import of certain GM crops. Within Europe, however, only one GM crop, a type of insect-resistant corn (maize), was cultivated.
- Countries such as Canada, China, Argentina, and Australia, had open policies on GM products.
- Japan is a leading GM food importer but has not grown GM food crops.
- Eleven countries grew modified soybean, with the USA, Brazil and Argentina accounting for 90% of the total hectare.
- Seventeen countries grow GM maize and fifteen grow GM cotton.
- Most of GM canola was grown in Canada.

- In Bangladesh, a GM eggplant was grown commercially for the first time.
- In India, only GM- cotton is produced.
- Some countries, including certain African states, had rejected GM products.

Conclusion

The GM foods have the potential to solve many of the world's hunger and malnutrition problems and to help protect and preserve the environment by increasing yield and reducing reliance upon synthetic pesticides and herbicides. Genetic engineering is the inevitable wave of the future and that we cannot afford to ignore a technology that has enormous potential benefits.

Best Answer: Ayush Dubey

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44. Examine the legal framework related to intellectual property rights in India? Is it a progressive one? Critically examine.

Introduction

In the backdrop of rapid globalization and liberalization of economies globally, the emergence of "Intellectual Capital" as a key wealth driver of international trade between countries has led to Intellectual property rights becoming an irreplaceable element. India too has a Trade Related Aspects of Intellectual Property Rights (TRIPS) compliant, equitable and dynamic IPR regime.

Body

Existing legal framework for IPR:

1. India's legal framework caters to the following areas of intellectual property:
 - Trade Marks: Trade Marks Act, 1999
 - Patents: The Patents Act, 1970 (amended in 2005)
 - Copyrights: The Copyright Act, 1957(amended in 2012)
 - Industrial designs: The Designs Act, 2000
 - Geographical indications: The Geographical Indication of Goods (Registration and Protection) Act, 1999

- Layout designs of integrated circuit: The Designs Act, 2000
- Varieties of plant: The Protection of Plant Varieties and Farmers Rights Act, 2001
- Information Technology and Cybercrimes: The Information Technology Act, 2000
- Data protection.
- Traditional Knowledge: Traditional Knowledge Digital Library.

A comprehensive **National IPR policy** has been approved that will not only stimulate innovation and creativity across sectors, but also provide a clear vision regarding IPR issues.

- IPR Awareness: Outreach and Promotion – To create public awareness
- Generation of IPRs.
- Legal and Legislative Framework: To balance the interests of rights owners with larger public interest.
- Administration and Management.
- Commercialization of IPRs.
- Enforcement and Adjudication: For combating IPR infringements.
- Human Capital Development: To strengthen and expand human resources, institutions and capacities for teaching, training, research and skill building in IPRs.

Commendable progressiveness of the policy:

- Trademark offices have been modernized with the aim to reduce the time taken for examination and registration to just a month.
- The Policy also seeks to facilitate domestic IPR filings, for the entire value chain from IPR generation to commercialization.
- It aims to promote research and development through tax benefits.
- Films, music, industrial drawings will be all covered by copyright
- IPR Ensures Safeguards for Indian Pharma Industry ensuring the availability of essential and life-saving drugs at affordable prices.
- It gives a strong message of supporting the Make in India Campaign.
- Lots of steps for Start-Ups have been recommended in the policy. The copyright subject matter has been shifted to help achieve objective of utilitarian industries like software, telecom and many more.
- It will allow compulsory licensing with restrictions in case of a public health emergency such as epidemics.
- Pro-IP policies of the Government such as ‘Accelerating Growth for New India Innovations’, ‘Start-up India’ and ‘Digital India’, was considered as one of the few reasons for improvement in the ranking in the 2019 International Intellectual Property (IP) Index, at 36th position among 50 countries.

Criticism of the existing framework:

- The policy lacks empirical rigour and appears more faith-based than fact based. It endorses a very formalistic and reductionist view of IP.

- It is not based on empirical studies and stakeholder surveys and but on intuitions and assumptions. It ignores other factors such as education and cultural aversion to risk.
- It is comparatively silent on the issue of traditional knowledge and the informal creativity/innovations.
- WIPO statistics suggest that patenting by Indian public research organizations (PROs) and universities is still quite limited.
- India's IP registration offices are overburdened and there are yawning gaps in enforcement of the policy.
- Multiple problems are still faced by pharmaceutical, software, biotechnology, automotive, movie, music and other technology-led, IP-intensive industries due to weak behavioural approach.
- India is named in the US- priority watch list to highlight the poor implementation especially in checking digital piracy and compulsory licensing.
- 36 out of 50 countries is still a disappointing rank, and show a lack of effective innovative growth.

What steps have been taken?

- Strengthening of Institutional Mechanism: All IPRs under one umbrella and one Appellate Board have been institutionalised.
- Establishment of Cell for IPR Promotion and Management (CIPAM) to assist in simplifying and streamlining of IP processes.
- Clearing backlog/reducing pendency through targeted augmentation.
- Business provisions have been re-engineered to make it user friendly and CPGRAMS for grievance redress.
- IPRs included in school syllabus and IPR Enforcement Toolkit for Police.

Conclusion

The legal setup in India nicely tries to balance public rights with private rights and provides adequate incentives for entrepreneurs to innovate. However, implementation of various laws has been lax, with patent or copyright infringement and piracy not uncommon. Therefore, a holistic and a more progressive policy can ensure the growth of the abundance of creative and innovative energies flowing in India.

Best Answer: Ayush Dubey

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45. What is internet of things (IoT)? What can be its day to day applications? Discuss.

Introduction

The Internet of things (IoT) is the extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled.

Body

Applications of internet of things:

- **Smart home:** Smart Home has become the revolutionary ladder of success in the residential spaces and it is predicted Smart homes will become as common as smart phones.
- **Smart cities:** IoT will solve major problems faced by the people living in cities like pollution, traffic congestion and shortage of energy supplies etc. Products like cellular communication enabled Smart Belly trash will send alerts to municipal services when a bin needs to be emptied.
- **Agriculture:** Farmers are using meaningful insights from the data to yield better return on investment. Sensing for soil moisture and nutrients, controlling water usage for plant growth and determining custom fertilizer are some simple uses of IoT.
- **Energy utilization:** Smart Grids will also be able to detect sources of power outages more quickly and at individual household levels like nearby solar panel, making possible distributed energy system.
- **Healthcare:** The collected data will help in personalized analysis of an individual's health and provide tailor made strategies to combat illness.
- **Connected car:** It has the responsibility of making decisions with consistency, accuracy, and speed. It also has to be reliable.
- **Manufacturing:** The IoT intelligent systems enable rapid manufacturing of new products, dynamic response to product demands, and real-time optimization of manufacturing production and supply chain networks, by networking machinery, sensors and control systems together.
- **Environmental monitoring:** to assist in environmental protection by monitoring air or water quality, atmospheric or soil conditions, and can even include areas like monitoring the movements' of wildlife and their habitats.
- **Supply chain:** By placing RFID or NFC tags on individual products, the exact location of single items in a large warehouse can be shared, thus saving search time, streamlining infrastructure, and lowering labour costs.

Disadvantages of internet of things:

- **Breach of privacy:** Day to day life is monitored and recorded. There is always the possibility of hackers breaking into the system and stealing the data.
- **Over-reliance on technology:** Relying on technology on a day to day basis, making decisions by the information that it gives up could lead to devastation. No system is robust and fault-free.

- **Loss of jobs:** Due to swift and precision making work there will be sack of jobs
- **Security:** As the IoT systems are interconnected and communicate over networks. The system offers little control despite any security measures, and it can be lead the various kinds of network attacks.
- **Complexity:** The designing, developing, and maintaining and enabling the large technology to IoT system is quite complicated.
- **Technology Takes Control of Life:** Our lives will be increasingly controlled by technology, and will be dependent on it

Conclusion

Every new technology faces a million challenges in its initial phases. Internet of Things also poses some grave issues that need to be tackled well in order to utilize its fullest potential.

Best Answer: LR..

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46. Is it possible to strike a balance between developmental imperatives of a growing economy like India and the limits to growth imposed by environmental degradation? Critically analyse.

Introduction

There is a certain carrying capacity of the environment. When the rate of extraction of resources exceeds the rate of their regeneration, the environment fails to perform its activities. The resulting phenomenon is called environmental degradation.



Body

India's remarkable growth record has been clouded by a degrading environment and growing scarcity of natural resources. Rapid economic development is turning India into a vast wasteland. A World Bank report finds that environmental degradation costs India \$80 billion per year or 5.7% of its economy.

Development and Environmental Degradation:

India's development objectives have consistently emphasized the promotion of policies and programmes for economic growth and social welfare. At the same time, because of the growing population and high degree of mechanisation, mindless and ruthless exploitation of natural resources, we have degraded our physical environment such as, soil, water, and biotic factors on which we all subsist, and on which our entire agricultural and industrial development depends.

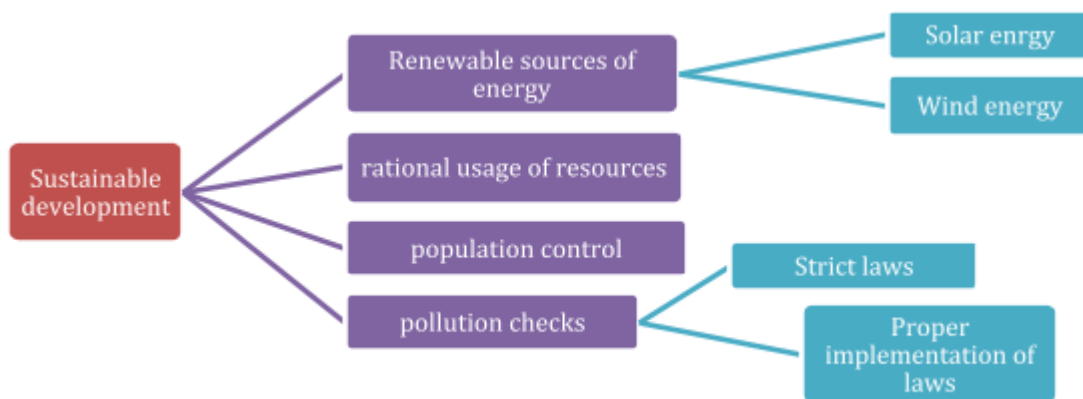
- The manufacturing technology adopted by most of the industries has placed a heavy load on the environment, especially through intensive resource and energy use, as is evident in natural resource depletion (fossil fuel, minerals, and timber), water, air and land contamination, health hazards and degradation of natural eco-systems.
- With high proportion fossil fuel as the main source of industrial energy and major air polluting industries such as iron and steel, fertilizers and cement growing, industrial sources have contributed to a relatively high share in air pollution.
- Large quantities of industrial and hazardous wastes brought about by the expansion of the chemical-based industry have compounded the wastes management problem with serious environmental health implications.

- Transport activities have a wide variety of effects on the environment such as air pollution, noise from road traffic and oil spills from marine shipping. Port and harbour projects mainly impact on sensitive coastal ecosystems. The iron construction affects hydrology, surface water quality, fisheries, coral reefs and mangroves to varying degrees.
- Direct impacts of agricultural development on the environment arise from farming activities which contribute to soil erosion and loss of nutrients. The spread of green revolution has been accompanied by overexploitation of land and water resources, and the use of fertilizers and pesticides have increased many folds. Shifting cultivation has also been an important cause of land degradation.
- Economic growth and changing consumption patterns have led to rising demand for energy and increasing transport activities. Air, water and noise pollution together with water scarcity dominate the environmental issues in India.

Way forward:

On the other hand, to eradicate poverty and increase growth in the economy, development is mandatory. Without economic development, a nation cannot come out of the vicious circle of poverty. As our population grows, finding a balance between economic advancement and consumption of natural resources is a vital question that we should address.

- Green growth strategies are needed to promote sustainable growth and to break the pattern of environmental degradation and natural resource depletion. Emission reductions can be achieved with minimal cost to GDP.
- Conventional measures of growth do not adequately capture the environmental costs, therefore, it is imperative to calculate green Gross Domestic Product (green GDP) as an index of economic growth with the environmental consequences factored in.
- Policy interventions such as environmental taxes could potentially be used to yield positive net environmental and health benefits with minimal economic costs for India.
- GDP growth rate will be negligibly reduced by about 0.02 to 0.04% if we adopt for environmentally sustainable growth models, but simultaneously there will be significant health benefits which will compensate for the projected GDP loss. Another important benefit would be a substantial reduction in CO₂ as a co-benefit which has the potential of being monetized.
- Good environmental governance which limits the exploitation of natural resources to sustainable levels.
- Reduce multiplicity of authorities for environmental management and improve coordination among them.
- The transition to economic growth coupled with efficiency in natural resource use and its conservation can help India attain its goals of inclusive growth with sustainable development.



Conclusion

Environmental sustainability could become the next major challenge as India surges along its projected growth trajectory. While the overall policy focus should be on meeting basic needs and expanding opportunities for growth, they should not be at the expense of unsustainable environmental degradation. We need to save our resources for our future generations so that they can live in a healthy environment.

Best Answer: Eternal optimist

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47. Why are urban floods so frequent and devastating in India? What measures can be taken to address urban flooding in India? Discuss.

Introduction

Flood is an overflow of a large body of water over areas not usually inundated. Thus, flooding in urban areas is caused by intense and/or prolonged rainfall, which overwhelms the capacity of the drainage system and hence affects large number of people due to high population density in urban areas.

Body

Urban flooding is significantly different from rural flooding as urbanization leads to developed catchments, which increases the flood peaks from 1.8 to 8 times and flood volumes by up to 6 times.

Causes of frequent urban floods:

Natural:

- **Meteorological Factors:** Heavy rainfall, cyclonic storms and thunderstorms causes water to flow quickly through paved urban areas and impound in low lying areas.
- **Hydrological Factors:** Overbank flow channel networks, occurrence of high tides impeding the drainage in coastal cities.
- **Climate Change:** Climate change due to various anthropogenic events has led to extreme weather events.

Anthropological:

- **Unplanned Urbanization:** Unplanned Urbanization is the key cause of urban flooding. A major concern is blocking of natural drainage pathways through construction activity and encroachment on catchment areas, riverbeds and lakebeds.
- **Destruction of lakes:** A major issue in India cities. Lakes can store the excess water and regulate the flow of water. However, pollution of natural urban water bodies and converting them for development purposes has increased risk of floods.
- **Unauthorised colonies and excess construction:** Reduced infiltration due paving of surfaces which decreases ground absorption and increases the speed and amount of surface flow
- **Poor Solid Waste Management System:** Improper waste management system and clogging of storm-water drains because of silting, accumulation of non-biodegradable wastes and construction debris.
- **Drainage System:** Old and ill maintained drainage system is another factor making cities in India vulnerable to flooding.
- **Irresponsible steps:** Lack of attention to natural hydrological system and lack of flood control measures.

Impact of the devastation due to floods:

- **On economy:** Damage to infrastructure, roads and settlements, industrial production, basic supplies, post disaster rehabilitation difficulties etc.
- **On human population and wildlife:** Trauma, loss of life, injuries and disease outbreak, contamination of water etc.
- **On environment:** Loss of habitat, tree and forest cover, biodiversity loss and large scale greenery recovery failure.
- **On transport and communication:** Increased traffic congestion, disruption in rail services, disruption in communication- on telephone, internet cables causing massive public inconvenience.

Measures to address urban flooding in India:

- **National Disaster Management (NDMA) Guidelines:** In 2010, NDMA had issued guidelines on Urban Flood Management in India -to create a National Hydro-meteorological Network for providing early warning, use of Doppler Weather Radars to be expanded to cover all urban areas in the country, an inventory of the existing storm water drainage system to be prepared etc.
- **Rain water harvesting and other check measures:** on-channel storage of rain water in storm drains, artificial recharge trenches, retention basins, deepening of ponds and lakes etc.
- **Sustainable usage of land:** Low-lying areas in cities have to be reserved for parks and other low-impact human activities, restrict encroachments in natural drainage areas; clearance of river beds, proper implementation of Coastal Regulation Zone rules. Planting drought resistant and flood resistant sturdy trees in vulnerable areas also helps.
- **Utilising International best practices:** Implementing 'Mobile Walls' like in Germany, and 'sponge' cities in line with cities in China which involves replacing concrete pavements with porous pavements to ensure better filtration.
- **Policy making and city planning:** Each city should have their Flood mitigation plans strongly embedded within the master plan of the city. There should be prompt, well-coordinated and effective response in case of urban floods to minimize casualties and loss of property and also facilitate early recovery.
- **Wetlands protection:** Urban flooding may increase if wetlands not protected. Centre for Science and Environment(CSE) has recommended strong laws to protect urban lakes, their catchment and feeder channels

Conclusion

Floods have become a more common phenomenon in the wake of the climate change and unorganised urban development has worsened the situation. India has to learn its lessons from recent floods, in Assam, Bihar, Tamil Nadu, Karnataka and Kerala. Addressing the underlying causes and taking immediate effective corrective measures is most important need to tackle and overcome the floods and its devastation.

Best Answer: Aim2020

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48. In climate negotiations, can India afford to stick around the erstwhile position that it took along with other developing nations? What are the constraints imposed upon India's

historical posturing on climate change by the changing dynamics of global politics? Analyse.

Introduction

For India and other G77 nations, the Kyoto Protocol emphasised the continued relevance of the firewall differentiation between developed and developing nations with respect to the burden of responsibility for climate action. India was able to successfully protect its space for socio-economic development while simultaneously pushing for developed countries to take on more responsibilities.

Body

Background

- As President Donald J. Trump withdrew the United States from the Paris climate agreement, elsewhere in the world other leaders clarified their commitment to the pact
- Asserting that India and China have “already grown” and it was unfair of them to take advantage of the “developing countries” tag by the World Trade Organisation (WTO) by USA.

India can stick around the erstwhile position along with developing nations:

- India is still backward: India also continues to remain a poor country by global standards with a third of the population below the poverty line.
- GDP per capita: In India in 2015 was roughly 1,600 USD per annum compared to 56,000 USD in the United States (World Bank 2016).
- Per capita emission: India’s per capita emissions are low at around a third of the global average, and average Indian electricity consumption per capita is roughly a quarter of the global average and stood at just 10 percent of that of the Organisation for Economic Co-operation and Development (OECD) countries.
- Huge population and area: Both for its sheer size and its position as an emerging economic power, India is an important aspect in climate action.

India cannot stick around the erstwhile position along with developing nations:

- **Largest emitter:** India is the world’s third largest emitter with rising emissions and therefore matters significantly to climate action.
- **Common But Differentiated Responsibilities (CBDR):** CBDR is based on relationship between industrialization and climate change. The more industrialized a country is, more likely that it has contributed to climate change. States came to an agreement that developed countries contributed more to environmental degradation and should have greater responsibility than developing countries.
- **Responsible for climate changes:** India had stated its goal to reduce its carbon intensity by some 35 percent by 2030, and had crafted an ambitious package focused on the

rapid deployment of renewable energy—175 GW of renewable energy capacity—by the year 2022.

- **Carbon emissions:** International negotiating position had emphasized India's developmental needs; it's comparatively and historically low per capita emissions, and its desire to grow its economy before curbing carbon emissions.

Constraints imposed upon India on climate change:

- USA wants countries such as China and India to give up their 'developing country' status, given their rapid economic progress.
- USA ended duty-free preferential trade benefits for India — under the Generalized System of Preferences (GSP).

Way forward:

- At COP 19 in Warsaw in 2013, the idea of Nationally Determined Commitments was first mooted and eventually led to the final version of Intended Nationally Determined Contributions (INDCs) which was adopted by countries in 2014 at COP 20 in Lima.
- India committed to installing clean energy capacity equivalent to 40 percent of the total installed electrical capacity in the country by 2030, pledged to reduce the carbon intensity of its economy by 33-35 percent by 2030.

Conclusion

India would do well to adopt a pro-active stance towards international climate negotiations. As a responsible member of the global community, India could offer to be part of an equitable solution based on common but differentiated responsibilities.

Best Answer: Eternal Optimist

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49. What are the main principles of environmental impact assessment (EIA)? Is EIA central to various infrastructure projects in India? Examine.

Introduction

Environmental Impact Assessment (EIA) is one of the tools available with the planners to achieve the goal of harmonising development activities with the environmental concerns.

EIA in India is statutorily backed by the Environment Protection Act 1986, which contains the provisions on EIA procedures.

Body

Main Principles of EIA

- **Purposive:** The process should inform decision making and result in appropriate levels of environmental protection and community well-being.
- **Participative:** The process should provide appropriate opportunities to inform and involve the interested and affected publics, and their inputs and concerns should be addressed explicitly in the documentation and decision making.
- **Rigorous:** The process should apply best practicable science, employing methodologies and techniques appropriate to address the problems being investigated.
- **Interdisciplinary:** The process should ensure that the appropriate techniques and experts in the relevant bio-physical and socio-economic disciplines are employed, including use of traditional knowledge as relevant.
- **Practical:** The process should result in information and outputs which assist with problem solving and are acceptable to and able to be implemented by proponents.
- **Credible:** The process should be carried out with professionalism, rigor, fairness, objectivity, impartiality and balance and be subject to independent checks and verification.
- **Cost-effective:** The process should achieve the objectives of EIA within the limits of available information, time, resources and methodology.
- **Integrated:** The process should address the interrelationships of social, economic and biophysical aspects.
- **Efficient:** The Process should impose the minimum cost burdens in terms of time and finance on proponents and participants consistent with meeting accepted requirements and objectives of EIA.
- **Transparent:** The process should have clear, easily understood requirements for EIA content, ensure public access to the information, identify the factors that are taken into account in decision making and acknowledge limitations and difficulties.
- **Focused:** The process should concentrate on significant environmental effects and key issues i.e. the matters that need to be taken into account in making decisions.

EIA is central to various projects in India:

- EIA started in India in 1976-77, when planning commission directed the Department of Science and Technology to assess the river valley projects from the point of view of Environment.
- Several Acts and Amendments like Environmental Protection Act(EPA) 1986, EPA Amendment Act 2006 have made provisions for EIA more stronger.
- In 1982, the Environment Ministry has setup Environmental Information System (ENVIS) with the purpose of collecting, collating, storing, retrieving and disseminating information related to environment.
- This has ensured peaceful operations and conflict management in many mining and manufacturing sites in India. Example- Operations in Coal Belt of India, Singareni Coal fields etc.
- Government has time and again appointed committees to look into environmental protection. Example- Gadgil and Kasturirangan Committees on Western Ghats ecology.
- Recently, Bombay High court judgement cancelled the Mumbai Coastal Road project stating work cannot proceed without obtaining an environmental clearance under EIA, is indicative of the importance of EIA for projects in India.

However, EIA has been side-lined many times and is not given significance. The Tuticorin Sterlite Issue, where locals and activists have accused improper environmental assessment. Karnataka and Kerala have been opposing Gadgil and Kasturirangan committee report declaring Western Ghats as eco-sensitive, depicts the lower significance given to Environmental Assessment.

Conclusion

There is a need to strengthen the implementation of EIA, Independent EIA Authority is required for fair and objective decisions. There is also a need for centralised data bank for storing information and the transparency must be maintained in dissemination of all information related to projects from notification to clearance to local communities and general public.

No Best Answer

50. What strategies do left wing extremists adopt to destabilise the democracy? What has been the government's strategy to thwart such threats? Examine.

Introduction

Left Wing Extremism or Naxal Movement has been the source of extreme violence in some parts of the country. These extremists are internally waging wars against the state. It is considered to be the most important security concern. These extremist movements have disconnected several tribal villages from the national main stream. They want abolition of state to establish the rule of people. These extremists attack the symbols of the country's power such as the police, schools and other government institutions.

Body

Strategies adopted by LWE

- They threaten the locals before the conduct of elections and prevent them from voting. Violating the principle of participative democracy.
- They resort to violence through their guerrilla tactics and attempt to setup their own government in the local villages.
- They destroy the roads, transport system and government resources, thereby creating hindrance in governance and last mile connectivity. The poor are deprived further.
- Urban Naxals, who sometimes operate under the cloak of NGOs or social-work units, raise questions about the use of force by government machinery. This helps them build a strong bastion of sympathisers and volunteers in towns and cities and across social media.
- They resort to extortion, abduction of important personalities like Politicians, bureaucrats, police etc and put up their demand.
- They hire vulnerable people who have low literacy levels, unemployed or low income, particularly the tribals, who aren't aware of consequences of joining such forces, building up their cadre.
- They also have nexus with politicians, they find this as a medium to put up their demands through voices of Politicians.
- They attack the police, government and collect weapons, technological devices to fight against them on technological front.

Government Strategy

- Ministry of Home Affairs has created a Left Wing Extremism division to effectively address the Left Wing Extremist insurgency in a holistic manner. This division deals with security related aimed at capacity building in LWE affected states.
- SAMADHAN strategy of government to frame short term and long term policies to tackle LWE. The acronym SAMADHAN stands for Smart leadership, Aggressive strategy, Motivation and training, Actionable intelligence, Dashboard Based KPIs (key performance indicators) and KRAs (key result areas), Harnessing technology, Action plan for each theatre, and No access to financing.
- Government has formulated National Policy and Action Plan adopting multi-pronged strategy in the areas of security, development, ensuring rights & entitlement of local communities etc. This has several sub-schemes like Security related expenditure scheme(2017-20), Special Central Assistance scheme which involves modernisation of

police force, Civic action program which aims at bridging the gap between Police and locals through personal interaction.

- Institutional measures like Blank Panther Combat Force (in line with the Greyhounds of Andhra and Telangana region), Bastariya battalion (locals joining as police, who are well informed of the terrain), multidisciplinary groups under MHA to check funding to the naxalites.
- On Infrastructure development front, government has been constructing roads, LTE mobile tower project to bring the locals into mainstream.
- Government is aiming for capacity building and skill development of the locals, schemes like ROSHNI that aims at providing jobs to the locals, the Ekalavya model residency schools for better educational facility to tribal children.
- Government is also working on Economic Inclusion, like providing support prices for Minor forest produce (MFP), establishing Van Dhan Kendras to aid tribal income.
- The Surrender and Rehabilitation policy too, has seen success to some extent.

Conclusion

The action needs to be on both the fronts i.e. action through security forces and developmental action that should aim at integrating the locals with the outside world. The Greyhounds model of Andhra Pradesh that helped northern Telangana districts get rid of Naxalism, can help us find many solutions.

Best Answer: CR7

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51. India is the typical example of a country suffering from external state sponsored terrorism. Comment. How is the government planning to address it? Discuss.

Introduction

State-sponsored terrorism is government support of violent non-state actors engaged in terrorism. This warfare by proxy is as old as the history of military conflict. Today state sponsored terrorism has considerably altered the nature of terrorist activities around the world.

Body

In recent times, some countries have embraced terrorism as a deliberate instrument of foreign policy. India has been facing this problem from Independence:

- Pakistan nurtures such groups to engage in low grade wars against India and compensate for its traditional military weakness. Lashkar-e-Taiba operating from PoK is supported by ISI of Pakistan. It carried parliament attack in 2000 and Mumbai attack in 2008
- Attacks by state sponsored terrorists hamper the global image of India. As India's global position grows, any terror attack casts doubts over its internal security framework, hurts India's reputation, and deters potential investors seeking stability. This harms India's developmental Aspirations.
- Groups like Let, JMB, etc enjoy patronage and safe haven in Pakistan, despite global condemnation and they are used to wage proxy wars on in the state of J&K, instilling fear and overall instability in the region.
- Recent attack of military base at Uri and Pathankot and regular infiltration of terrorist and cross border firing along the LOC are instances where terror was raised with the help of state forces.
- Instances of outfits of China Maoists supporting Indian Naxalites ideologically, morally and financially which is a great threat to India's internal security are also seen.

How is the government planning to address it?

- Five point formula: Addressing UN High Level conference on Heads of Counter Terrorism Agencies Special Secretary, Internal Security of India extended five-point formula:
- Exchange of timely and actionable intelligence;
- Prevention of misuse of modern communication through collaboration with private sector;
- Building capacities for improved border controls;
- Sharing of info related to movement of passengers.
- Designation of Counter-Terror focal points for establishing a possible global forum to fight global terror. Addressing the issue on global forums and involving all stakeholders at global stage.
- Recently, Indian Government also repealed Article 370, to strengthen the internal security and integrate the J&K region with the rest of the country. This move has been important because of the constant Pakistan sponsored terror acts and violence observed in the region.
- Convention on Countering International Terrorism (CCIT) was proposed by India two decades back and recently the SCO Summit backed India's proposal.

Challenges:

- India's counter-terror efforts continue to be thwarted due to lack of international collaboration in respect of exchange of information and evidence or of extradition of the accused persons who are hiding outside India's territory.
- Recognition of state sponsored terror acts and direct naming by International community is lacking.

- Reluctance by Pakistan to accept evidences and dodging effective solutions.
- India's internal security shortcoming.

Conclusion:

Countries like Pakistan, Iran, Iraq, Sudan, Libya and North Korea have been engaged in sponsorship of political violence of different nature in their 'enemy' countries. Combating terrorism and radicalisation is increasingly becoming a great threat globally. All nations must thrive together to combat this and ensure global peace through an effective and firm diplomacy.

Best Answer: Ayush Dubey

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52. What is religious indoctrination? How does it lead to youth adopting the path of terror? What is the best way to prevent it? Discuss.**Introduction**

Religious indoctrination is the type of biasing the thoughts and thought processing. The words are used in reference to promoting a one-sided opinion as being truthful, without allowing accesses to other ideas and with no reservation in calling it unjustifiably, the 'truth'.

Example: In the fundamentalist branches of Christianity and Islam, children are indoctrinated from a very young age that homosexuality is a sin, that you are going to hell if you don't accept Mohammed as God's final prophet or Jesus as your personal saviour.

Body**Factors lead to youth adopting the path of terror:**

- **Vulnerability:** Young people experiencing exclusion, disorientation or a polarized world view are more prone. Example: abandoned kids, poverty, and basic deprivation of resources.

- **Immaturity at the age of teens:** Any impulsive talks can trigger their minds and easy biasing can be noticed. Child with immature cognitive abilities in the helpless context of a family is an abuse of power.
- **Religion orientation:** Spirituality is being traded in the marketplace and there is no force to counter that. Youth are being over religious. Periodic emotional relief: The victim is always to blame and escape is extremely difficult because there is periodic emotional relief but no overall perspective.
- **Ignorance:** Parents are ignored about radicalization of the youth and left unchanged.
- In the name of education: children are sent to missionary schools and madrsas. Children mind are slowly biased to radicalization.
- **“Arabisation”:** What you should wear what your rituals or inter-sex relations should be — they have directly imported this culture. Huge influence among the youth can be seen.
- **Extremism is a rational strategy in a game over power:** Extremist actions are an effective strategy for gaining and maintaining power in a hierarchical environment.
- **Digital media:** Viral videos, easy access of videos make easy persuasion to follow radicalisation.

Ways to prevent:

- **Strict measures:** Vigilance, investigation and micro observing in the suspected areas.
- **Rehabilitation:** to rehabilitate the youth who are prone to radicalization and giving right livelihood.
- **Divide and conquer:** When one group is able to infiltrate the opposing side’s extremist groups, or establish relationships with ambivalent members of those groups, they can begin to create a wedge between members
- **Skilling and re-skilling:** Most of the youth are deprived by resources and poverty. Basic income can make their life to channelize to mainstream.
- **Peace building:** This approach, which is aimed at addressing the underlying conditions, which foster extremism through democratization, strengthening human rights.

Conclusion

Role of youth, role of parents, role of religious organization, role of media, role of the government, and role of NGOs are equally important in preventing the Religious indoctrination.

No Best Answer

53. How are external state and non-state actors using various social media platforms to further their agenda in India? Explain. How can such threats be averted? Discuss.

Introduction

While the advantages of social media are so many, the threats to internal security in various forms like Cyber Terrorism, Fraud, crime, spreading violence, etc. are alarmingly become frequent now. Various external state and non-state actors are using various social media platforms to spread propaganda globally, including in India.

Body

As internet has increased its reach and has become very accessible, it is a tool effectively used by state and non-state actors to spread 'Internet-enabled' terrorism, spread hate and tensions and disrupt the overall stability through their agenda:

- Radicalisation of youth: Propaganda information to recruit for terror groups like AQIS, LeT on telegram have been intercepted by NIA.
- Use of Internet by Daesh: Daesh has been using Internet to spread its propaganda using platforms such as twitter, YouTube etc.
- Constant involvement and interaction: By 'cyber-planners', who will be responsible for planning terror attacks, identifying recruits, act as "virtual coaches", and provide guidance and encouragement throughout the process.
- In Recruitment from other countries: India is also suffered from it however less severely. Increasing number of cases of youth being influenced by social media to carry out propaganda of hate and violence has been reported in many areas.
- Rise of sentiments over sensitive issues: By spreading false propaganda and fraudulent ideologies over sensitive and triggering issues of India using morphed videos, or false claims of proof of injustice etc.

Precautions to avoid such threats:

- Review of the IT Act to make it stronger and setting up a crack team to respond to unusual incidents on a war footing.
- Strengthening the existing infrastructure : e-Surveillance Projects: National Intelligence Grid (NATGRID), CERT-In, Central Monitoring System (CMS), Internet Spy System Network and Traffic Analysis System (NETRA) of India, National Critical Information Infrastructure Protection Centre (NCIPC) of India etc.
- Strengthening of social networking sites.
- Responsible social media by citizens themselves can avoid a major risk threat.
- Awareness programmes regarding the safe usage of Internet and social media among the people.
- Training and employing ethical hackers to check vulnerabilities present in the cyberspace and respond quickly when there is a cyber-attack.

Challenges:

- **Vulnerability of users:** Several users get blackmailed, or taken advantage of using their vulnerability and misguided knowledge.

- **Server location and laws of different countries:** Lack of geographical boundaries makes social media regulation an arduous task. Major complicating factors to secure the networks and media are a huge concern.
- **Encrypted message and anonymity:** Use of phones/whatsapp to send and receive messages, concerns the government because the communications sent via such devices and applications are encrypted and cannot be monitored and consequently hinders the country's efforts to fight terrorism and crime.

Conclusion

India has joined a France led initiative to adopt a declaration to counter terrorism and radicalisation online including social media which is a welcome step in tackling this issue. Enhanced cooperation among the wide range of actors with influence over this issue, including governments, civil society, and online service providers, such as social media companies, to eliminate the spread of negative agenda is the way forward.

Best Answer: SRK

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54. There is a thin line between freedom of expression and irresponsible civic behaviour. Do you think regulations are required to be introduced to make sure this thin line is abided by the social media users? What are the challenges in regulating the social media? Explain.

Introduction

Social Media has become a vital communications tool through which individuals can exercise their right of freedom of expression and exchange information and ideas.

Body

Freedom of expression:

- **Raising voice:** A growing movement of people around the world has been witnessed who are advocating for change, justice, equality, accountability of the powerful and

respect for human rights (e.g. Arab Spring Revolution) wherein the Internet and Social Media has played a key role.

- **Hashtag activism:** The term can also be used to refer to the act of showing support for a cause through a like, share, etc. on any social media platform, such as Facebook or Twitter. Example: metoo, saveearth,

Irresponsible civic behaviour:

- **Defamation:** The most affected people through social media are politicians and celebrities. People got another medium to express their anger and to defame them through tweeting or by other social networking sites.
- **False and unreliable information:** People make fake email accounts of celebrities and spread untrue stories about them.
- **Sexual predators:** For example, the most common scenario when a man of 42 years make an email account using fake name and picture of 16 years old boy, communicate to others and ask them to meet in person.
- **Cyberbullying:** Cyberbullying is the act of bullying by harming or harassing using electronic technology. It adds users to the bullies account and begins to bully in the way of harassing the user through teasing, derogatory remarks, etc.
- **Fraud:** for example, person with the attractive profile picture who just friended you, and suddenly needs money — is probably some cybercriminal looking for easy cash.
- **Religious indoctrination:** viral videos, influence on youth, radicalization of youths are some of the threats.

Regulations are required:

- **Section 66A of the Information Technology Act:** Punishment for sending offensive messages through communication service. It is punishable with imprisonment for a term which may extend to three years and with fine.
- **Section 69 of the Information Technology (IT) Act, 2000:** It has the power to impose reasonable restrictions on this right and intercept, decrypt or monitor Internet traffic or electronic data whenever there is a threat to national security, national integrity, and security of the state.
- **e-Surveillance Projects:** National Intelligence Grid (NATGRID), Central Monitoring System (CMS), Internet Spy System Network and Traffic Analysis System (NETRA) of India, National Critical Information Infrastructure Protection Centre (NCIPC) of India, National Cyber Coordination Centre (NCCC) of India, Tri Service Cyber Command for Armed Forces of India, Cyber Attacks Crisis Management Plan Of India.
- **State Computer Response teams:** Establishment of the State CERT to operate in conjunction ICERT and coordinate with NCIIPC

Challenges in regulating the social media:

- **Targeted phishing attacks:** Such attacks are carried out to steal money or confidential information, as was the case with the Hydraq attacks in early 2010 that compromised critical information of several multi-national companies.

- **Activities across borders:** difficult to trace and take actions related to international crimes.
- **Criminal Activity and Money laundering:** Organised criminals are now using social media to recruit some public individuals to act as unsuspecting money launderers of their money they got from their dirty works like drug smuggling, people trafficking and fraud.
- **Policy framework:** Acts are not stringent and demarcated to take action against the fraud.

Conclusion

It is important to keep the pace with the rapidly changing society. Even today the society is not prepared to bear the consequences of the misuse of social media which will result in the unacceptable and unfamiliar social behaviour.

Best Answer: Narayan

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55. What is bullying? Why has it become so rampant on the social media? How can it be addressed? Discuss.

Introduction

Bullying is when an individual or a group of people with more power, repeatedly and intentionally cause hurt or harm to another person or group of people who feel helpless to respond. Bullying can continue over time, is often hidden from adults, and will probably continue if no action is taken.

Body

Bullying in social media:

- Against the individual feelings: Posting hurtful, nasty or humiliating rumours or comments about an individual online
- Vested intentions: Publishing an embarrassing or nasty photo or video
- Fake news: Creating a fake or nasty webpage about another individual.
- Vulnerable sections: students, adolescents, transgender are easily prone to bullying. Example: In November 2017, an MBBS student in Kerala jumped to her death from the

highest floor of her college building. An examination of her Facebook profile showed her displeasure over the nasty comments made one of her peers. Police suspect that cyber bullying provoked her to take this extreme step

- Provoking and influencing: Issuing online threats provoking an individual to kill themselves or hurt someone else
- In the name of religion: Triggering religious, racial, ethnic or political vitriol online by posting hate comments or content
- Online predatory: Faking an identity online to ask for or post personal or fake information about someone

Measures to avoid cyber bullying:

- Be Wary of Your Child's Online Activities: Teenagers and adolescents are more vulnerable to cyber bullying as they have limited understanding of the good and the bad
- Watch keenly regarding emotions: Display of emotional responses such as sadness, anger or happiness to the activities on their device.
- Legal framework: No special Anti-Cyber Bullying Laws in India yet. Following are some cyber laws though that covers some of the acts classified as cyber bullying in India.
- Private institution: Incognito Forensic Foundation (IFF Lab) is a private forensic laboratory in Bangalore and Chennai that offers consultation and digital forensic services for cyber bullying.
- Restore self-respect: Remember that the ultimate goal is to protect and restore the victim's self-respect. Act thoroughly; fast decisions can only make things worse. Talk to someone about the problem before responding.

Conclusion

Recovering from the trauma of cyber bullying can be time-taking and hard. In such cases, the victim needs support and guidance. It could come from parents, peers, family members or teachers. If required, seek the help of a professional counsellor.

No Best Answer

56. What are the most potent cyber security threats in the age of digital economy? Discuss. Also, comment upon India's preparedness to avert cyber security threats.

Introduction

Cyber security refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. These cyber-attacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes.

Body

Most potent cyber security threats in the age of digital economy

- **Phishing:** is the fraudulent attempt to obtain sensitive information such as usernames, passwords and credit card details by disguising oneself as a trustworthy entity in an electronic communication. This results in data theft and loss of sensitive information.
- **Vishing/Social engineering:** Vishing works like phishing but does not always occur over the Internet and is carried out using voice technology.
- **Hacking:** Hackers intrude into others financial domains and make financial transactions into their digital accounts.
- **Cyber Ransom:** Ransomware is a form of malware that encrypts a victim's files. The attacker then demands a ransom from the victim to restore access to the data upon payment.
- **Ineffective firewall system:** This can be ineffective in tackling the virus/corrupt files with an intent to collect crucial information.
- **DDoS Attack:** It is a malicious attempt to disrupt normal traffic of a targeted server, service or network by overwhelming the target or its surrounding infrastructure with a flood of internet traffic. This can be done to disrupt essential public services.
- **Unregulated Cryptocurrency:** Any cyber-attack (Crypto-Jacking) on such financial transactions can be a potential threat with no regulations available.
- **Low end use digital financial education:** With limited awareness about digital financial service, person is always vulnerable to external threats.

India's Preparedness

- **National Cyber Security Policy 2013:** It provides for creating a secure cyber ecosystem. With computer emergency response team (CERT-in) as nodal agency for coordination of cyber security, emergency responses and crisis management.
- **CERT-Fin:** Umbrella CERT for the financial sector and reports to Indian Computer Emergency Response Team (Cert-In) at the national level.
- **National Cyber Security and Coordination Centre:** intended to screen communication metadata and co-ordinate the intelligence gathering activities of other agencies.
- **Cyber Surakshit Bharat Initiative 2018:** to spread awareness about cybercrime and building capacity for safety measures for Chief Information Security Officers (CISOs) and frontline IT staff across all government departments.
- **Cyber Swachhta Kendras:** (Botnet Cleaning and Malware Analysis Centre) is a part of the Government of India's Digital India initiative under the Ministry of Electronics and Information Technology (MeitY) to create a secure cyber space by detecting botnet infections in India and to notify, enable cleaning and securing systems of end users so as to prevent further infections.
- India has also had agreements with several other foreign countries like US, Japan etc to tackle the menace of Cybercrime.

Way Forward

- India should become signatory to cybercrime convention (Budapest Convention) which puts a hurdle in dealing with transborder crime particularly.
- Cyber awareness must be spread and there should be multi-stakeholder approach- technological inputs, legal inputs, strengthening law enforcements, systems and then dealing with transborder crime involves lot of international cooperation.
- Effective and efficient role of National cyber security coordinator who heads the National Cyber Coordination Centre which intends to screen communication metadata and co-ordinate the intelligence gathering activities of other agencies.
- Awareness should be at industry, school, college level and law enforcement level and judiciary.

Conclusion

With estimates of India creating \$1 trillion of economic value from the digital economy by 2025. India should not loose on the cyber-attack front. Government and the private sector jointly have to give cyber security some priority in their security and risk management plan.

Best Answer: Write.s

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57. What does FATF stand for? What is its mandate? India has received some success on this forum recently. Can you discuss that?

Introduction

FATF stands for The Financial Action Task Force. It was established in July 1989 by a Group of Seven (G-7) Summit in Paris, initially to examine and develop measures to combat money laundering. The FATF Secretariat is housed at the OECD headquarters in Paris.

Body

FATF mandate:

In October 2001, the FATF expanded its mandate to incorporate efforts to combat terrorist financing, in addition to money laundering. In April 2012, it added efforts to counter the financing of proliferation of weapons of mass destruction.

The Financial Action Task Force (FATF) defines its mandate as to set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and proliferation of weapons of mass destruction and other related threats. They form the basis for a coordinated response to these threats to the integrity of the financial system and help ensure a level playing field.

The FATF monitors the progress of its members in implementing necessary measures, reviews money laundering and terrorist financing techniques and counter-measures, and promotes the adoption and implementation of appropriate measures globally. In collaboration with other international stakeholders, the FATF works to identify national-level vulnerabilities with the aim of protecting the international financial system from misuse. The FATF is, therefore, a 'policy-making body' which works to generate the necessary political will to bring about national legislative and regulatory reforms in these areas.

India and the Financial Action Task Force (FATF):

India became a member of the Financial Action Task Force (FATF) in 2010. FATF membership is very important for India in its quest to become a major player in international finance. It will help India to build the capacity to fight terrorism and trace terrorist money and help to successfully investigate and prosecute money laundering and terrorist financing offences. India will benefit from securing a more transparent and stable financial system by ensuring that financial institutions are not vulnerable to infiltration or abuse by organized crime groups.

In recent past, Pakistan had asked for India's removal from the group, citing bias and motivated action, but that demand was rejected. However, The Asia Pacific Group (APG) of the Financial Action Task Force (FATF) has put Pakistan in Enhanced Expedited Follow Up List (Blacklist) for its failure to meet its standards. This will benefit India in many ways, such as:

- Pakistan will be put under closer scrutiny immediately to curb terror financing.
- Reduced Pakistan funded terrorist attacks and infiltrations such as Pulwama and Mumbai attacks.
- Economic benefits to India as FATF has increased the cost of doing business with Pakistan which will attract less FDI now.
- Enhanced image of India in international forums as Pakistan will face an international boycott.
- Pakistan's already fragile economy will have a powerful blow which will be in India's favour in international trade.

Conclusion

India also needs to strengthen its policy to curb money laundering and be vigilant about terror financing in lines with FATF. PMLA and FCRA are good steps in this direction.

Best Answer: Jean Grey

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58. What are the most common avenues for money laundering in India? Enumerate the measures taken by the government to plug in the legal loopholes to address the problem of money laundering.

Introduction

Money laundering is the processes by which large amounts that are illegally obtained is given the appearance of having originated from a legitimate source. Some crimes such as illegal arms sales, terror funding, smuggling, corruption, drug trafficking and the activities of organized crime including tax evasion produce huge money which is required to be 'laundered' to make it look clean.

Body

There are 3 steps that exist individually and at times overlap each other in money laundering:

- **Placement**-criminally derived funds are introduced in the financial system;
- **Layering**-the funds are then 'washed' and its ownership and source are disguised;
- **Integration**- 'laundered' property is re-introduced into the legitimate economy;

Common avenues for money laundering in India:

- **Hawala**: Hawala is an alternative or parallel remittance system. In Hawala networks the money is not moved physically. For ex: A typical Hawala transaction would be like a resident in USA of Indian origin doing some business wants to send some money to his relatives in India. The person has option either to send the money through formal channel of banking system or through the Hawala system. The commission in Hawala is less than the bank charges and is without any complications for opening account or visit the bank, etc. The money reaches in to the doorstep of the person's relative and the process is speedier and cheaper.

- **Shell companies:** These are fake companies that exist for no other reason than to launder money. They take in dirty money as “payment” for supposed goods or services but actually provide no goods or services; they simply create the appearance of legitimate transactions through fake invoices and balance sheets.
- **Structuring Deposits:** Also known as smurfing, this method entails breaking up large amounts of money into smaller, less-suspicious amounts. The money is then deposited into one or more bank accounts either by multiple people (smurfs) or by a single person over an extended period of time
- **Third-Party Cheques:** Utilizing counter cheques or banker’s drafts drawn on different institutions and clearing them via various third-party accounts. Since these are negotiable in many countries, the nexus with the source money is difficult to establish.
- **Credit Cards:** Clearing credit and charge card balances at the counters of different banks.
- **Insurance Sector:** The internal channels of laundering money are agent/broker premium diversion, reinsurance fraud and rented asset schemes etc. Phony insurance companies, offshore/unlicensed Internet companies, staged auto accidents, vertical and senior settlement fraud are external channels of money laundering.
- **Open Securities Market:** the securities markets, which are known for their liquidity, may also be targeted by criminals seeking to hide and obscure illicit funds.
- **Cyber crimes:** identity theft, illegal access to e-mail, and credit card fraud are coming together with money laundering and terrorist activities. Large amounts of money is now stored in digital form.
- **Illicit stock options:** Example: Consider an investor ‘A’ who has incurred significant capital gains in a year. In order to offset these gains, they use illiquid stock options to book losses. The counterparty to these contracts, say investor ‘B’, books profit in these options. B already has an arrangement with A wherein he retains around 10-15 per cent of the profits made and transfers rest of the money to ‘A’ through non-banking channels.

(Gambling, Real estate, fictional loans etc. are other avenues used.)

Measures taken by the government to plug in the legal loopholes:

- The Income Tax Act, 1961
- The Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 (COFEPOSA)
- The smugglers and Foreign Exchange Manipulators Act, 1976 (SAFEMA)
- The Narcotic Drugs and Psychotropic Substances Act, 1985 (NDPSA)
- The Benami Transactions (Prohibition) Act, 1988
- The Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances Act, 1988.
- The Foreign Exchange Management Act, 2000, (FEMA): to consolidate and amend the law relating to foreign exchange with the objective of facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange market in India.
- Prevention of Money Laundering Act (PMLA), 2002: Recently union government has issued a notification on certain changes. The amendment seeks to treat money

laundering as a stand-alone crime, and clarifies that all PMLA offences will be cognisable and non-bailable. Therefore, ED will be empowered to arrest an accused without a warrant, subject to certain conditions.

- The Financial Intelligence Unit – India (FIUIND) is the nodal agency in India for managing the AML ecosystem and has significantly helped in coordinating and strengthening efforts of national and international intelligence, investigation and enforcement agencies in pursuing the global efforts against money laundering and related crimes.
- India is also a full time member of the Financial Action Task Force (FATF) which is responsible for setting global standards on anti-money laundering and combating the financing of illegal activities.
- The KYC policies followed by banks.

Conclusion

Inadequate technology, lack of awareness of problems, non-enforcing KYC norms, inadequate enforcement agencies etc are some challenges that need to be addressed in India. Combating the offence of money laundering is a dynamic process since the criminals involved in it are continuously looking for new ways to do it and achieve their illicit motives. Thus, to have an effective anti-money laundering regime, one has to think regionally, nationally and globally.

Best Answer: Aim2020

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59. How critical is border infrastructure development for the internal security of India? Discuss in the light of India's unique geo-strategic location and domestic politics of bordering states.

Introduction

India is bordering 17 states having the international borders with Pakistan, China,

Nepal, Bhutan, Myanmar and Bangladesh. India shares borders with Pakistan (3,323 km), China (3,488 km), Nepal (1,751 km), Bhutan (699 km), Myanmar (1,643 km) and Bangladesh (4,096 km).

Body**Significance of border infrastructure:**

- **The major border security challenges:** cross-border terrorism, infiltration and exfiltration of armed militants and insurgents, narcotics and arms smuggling; illegal migration; left-wing extremism and separatist movements aided by external powers.
- **Various strategies:** India has actively pursued the strategy of strengthening of border policing and guarding, creation of border infrastructure like roads, fencing and flood lighting on the borders, implementation of the Coastal Security Scheme to strengthen coastal security infrastructure, implementation of Border Area Development Programme and development of Integrated Check Posts (ICPs) on the land borders of the country including setting up of Land Ports Authority of India (LPAI).
- **To strengthen our infrastructure:** Border areas in Punjab and J&K are suffering from poor infrastructure and lack of connectivity and transportation, in the name border infrastructure we are developing states infrastructure.

India in geostrategic location:

- **Strategic location of the region:** Countries of this region share borders with China, Afghanistan, Russia and Iran. Tajikistan is located in proximity to the Pakistan-occupied Kashmir. This region is seen as a Eurasian bridge, connecting countries of Asia to Europe.
- **India-Pakistan:** Pakistan has a geostrategic location in South Asia where it will use Gwadar Port as a major trade route and a future trade hub. The importance of the China-Pakistan Economic Corridor (CPEC) and with it the Belt and Road Initiative, also known as the One Belt One Road or the Silk Road Economic Belt
- **India- China:** One is Aksai Chin, a virtually uninhabited high-altitude desert expanse of about 37,000 square kilometres. Aksai Chin lies between the Indian state of Jammu and Kashmir, and China's Xinjiang province, both regions that are also riven by separatist conflicts. On the other side, Arunachal Pradesh, a diversely populated hill region with a population of around 1.4 million people spread out over 84,000 square kilometres is also a geostrategic location.
- **India- Nepal:** holds a significant geopolitical position in the Himalayan region of the South Asia due to its geostrategic location acting as a buffer state between the two Asian giants- India and the China.
- **India- Bhutan:** It is sandwiched between two powerful nations, India and China. Because of its proximity to both the countries. India, is a close neighbour, has traditionally played a significant role in Bhutan. On the other hand Doklam plateau is an area with a plateau and a valley which lies on the Bhutan-China border, near India.
- **India-Myanmar:** The Kaladan Multi-Modal Transit Transport Project will connect the eastern Indian seaport of Kolkata with Sittwe seaport in Myanmar by sea. Major strategic and commercial transport route connecting North-East India, and South Asia as a whole, to Southeast Asia
- **India- Bangladesh:** Lying between the Himalayas in the north and the Bay of Bengal in the south, it offers the only land route connecting the two regions. Any invasion into

South Asia from the East must pass through Bangladesh. Bangladesh's close proximity to both India and China adds further to its geographic importance.

Border development program and domestic politics of bordering states:

- **Lack of implementation:** Even after about 10 years of implementation of BADP, the border blocks are yet to be opened up and are in utter backwardness due to their isolation and inaccessibility.
- **Limited sources:** The State Government, though handicapped by its limited resources, is committed to accelerate the pace of development and is trying its best for development of the border areas.
- **Irrational funding:** Presently, 10% of BADP fund allotted to the State Government is earmarked for security related schemes to be implemented by the state police and paramilitary forces and the balance 90% fund is equally distributed amongst the bordering blocks.
- **Other issues:** National credit registry politics in Arunachal Pradesh, Sinhalese prosecution in Sri Lanka are some of the other domestic politics

Conclusion

BRO has been frequently in news due to delays and other lacunae with regard to border road infrastructure. Proper and defined autonomy with respect to 3F: Funds, Functions and Functionaries will help to boost the rapid development of border road infra, ultimately leading to economically integrated and strategically amiable South Asia.

Best Answer: Redeemer911

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60. The increasing geo-strategic and economic significance of the Indian Ocean realm has necessitated the development of a robust coastal security ecosystem. Do you agree? Substantiate your response.

Introduction

The Indian Ocean is the third-largest of the world's oceanic divisions, covering 70,560,000 km² (27,240,000 sq mi) (19.8% of the water on the Earth's surface). It is bounded by Asia on the north, on the west by Africa, on the east by Australia, and on the south by the Southern Ocean or, depending on definition, by Antarctica.

Body

Geo-strategic significance of Indian Ocean:

- **Huge resources:** The Indo-Asia-Pacific region is the greatest maritime-littoral space that has the largest concentration of population, resources, developing economies, congested sea lanes, and contested territorial spaces.
- **Choke points:** The Indian Ocean is home to many choke points, such as the Straits of Hormuz, Straits of Malacca, Lombok and the Sunda Straits. Any disruption in traffic flow through these points can have disastrous consequences.
- **Muslim population:** The region is home to most of the world's Muslim population as well as India, one of the world's likely "rising powers."
- **Nuclear weapon states:** The Indian Ocean also is home to the world's two newest nuclear weapons states, India and Pakistan, as well as Iran, which most observers believe has a robust program to acquire nuclear weapon.
- **Communication:** The Indian Ocean is home to important SLOCs and maritime choke points. A large volume of international long haul maritime cargo from the Persian Gulf, Africa and Europe transits through this ocean.

Economic significance of Indian Ocean:

- **Fisheries:** The people of Bangladesh, Comoros, Indonesia, Maldives, and Sri Lanka get more than half of the animal protein in their diets from fish.
- **Mineral resources:** Indian Ocean is rising and strengthening because its littoral states possess more than 2/3 of world's oil reserves and roughly 35% of world's gas reserves, 60% of Uranium, 40% of gold and 80% of all diamond deposits. Indian Ocean is also important because of the industrial raw materials it possesses including lithium, nickel, cobalt, tin, manganese, phosphate etc
- **Offshore oil:** Forty per cent of the world's offshore oil production takes place in the Indian Ocean basin

Coastal security:

- **IORA:** Excellence for Maritime Safety and Security; and explore a regional surveillance network, including sharing of data and exchange of information on maritime transportation systems.
- **National Committee for Strengthening Maritime and Coastal Security:** It is headed by Cabinet Secretary Coordinates all matters related to Maritime and Coastal Security.
- **Electronic Surveillance:** National Command Control Communication and Intelligence Network (NC3I) has been launched to provide near gapless surveillance of the entire coastline and prevent the intrusion of undetected vessels, the coastal surveillance network projects consists of radar and automatic identification system.

Conclusion

China's aggressive soft power diplomacy has widely been seen as arguably the most important element in shaping the Indian Ocean strategic environment, transforming the entire region's dynamics. By providing large loans on generous repayment terms, investing in major infrastructure projects such as the building of roads, dams, ports, power plants, and railways, and offering military assistance and political support in the UN Security Council through its veto powers.

No Best Answer

61. Explain the evolving nexus between organised crime and terrorism. How does the symbiosis work? Illustrate.

Introduction

Organised crime (OC) is serious crime planned, coordinated and conducted by people working together on a continuing basis. Their motivation is often, but not always, financial gain. Terrorism is defined as the unlawful use of violence and intimidation, especially against civilians, in the pursuit of political aims. Earlier, the problems of organized crime and terrorism were considered as separate phenomena but after the horrific incident of September 11th attacks, researchers have started linking these two as terrorized occurrences.

Body

Evolving nexus between OC and Terrorism:

OC and Terrorism have been aiding each other with the tactics and methods to achieve their goals. Sometimes they get transformed from the one to the other, like OC to Terrorist organization and vice-versa. The evolving nexus can be observed in the case of Drug trafficking and terrorism, Illegal firearms trafficking, Cybercrimes and terrorism, money laundering, fake currency, human trafficking etc. Below given is a case study that explains the evolving nexus in Drug trafficking and Terrorism.

A case study of global nexus: Drug Trafficking and Terrorism

- Afghanistan survey report of United Nations Office on Drugs and Crimes (UNODC) estimates indicate that in 2017, opium poppy cultivation increased sharply to an unprecedented record high of 3,28,000 hectares from an estimated 2,01,000 hectares in 2016.
- It is also evident from the report that the markets in Europe and the US, which are the most important consumption source for high quality drugs, have also become the indirect facilitators of terrorism.
- The profits that drug sales help generate for criminal and terrorist groups, allow organisations like the Taliban to emerge as amongst the best funded and richest terror groups in the world.

- UNODC report indicates that, Drug trafficking groups in Europe are frequently also involved in the counterfeiting of goods, trafficking in human beings, smuggling of migrants and trafficking in weapons.
- This reinforces the trend of mutual benefit between criminal groups in Europe and the Taliban.

Symbiosis between OC and Terrorism:

This can be better understood with the help of examples:

- **Africa:** Groups such as Al-Qaeda in the Islamic Maghreb, Boko Haram and Al-Shabaab have taken advantage of regional dynamics, weak state structures and widespread corruption to engage in criminal activities such as Kidnapping for ransom, drug trafficking, and exploitation, to parlay their activities into political influence and military and financial power, even at the expense of moving away from their ideological aims.
- **Afghanistan and Pakistan region:** A combination of corruption, porous borders and weak rule of law, has created an environment in which criminals and terrorists can engage in KFR, drug trafficking and extortion to finance their organisations and networks, allowing each to engage in specific nodes within illicit supply chains. Groups such as the Taliban and Haqqani network have been known to cooperate in order to achieve mutual objectives.
- **Turkey:** PKK (Kurdistan Workers Party) has been known to toe the line between terrorism and organised crime, engaging in a number of illegal economic operations such as humans, drugs and cigarettes smuggling and other forms of organised crime, including extortion and money laundering, among its profit generating activities.
- **Europe:** The decline in traditional organised criminal use of terrorist tactics is being replaced with a growing trend of individual small-time criminals carrying out terrorist attacks.

Organised crime and terrorism in India:

- In the Northeast, extortion is the fundamental basis for funding all forms of terrorism. In addition to this, kidnapping has been used extensively for spreading terror and raising funds. Human trafficking, drug trafficking and gun running are some of the other criminal activities that have been common in these areas.
- In J&K, counterfeit currency has been a major source of funding terrorism.
- Terrorism in Punjab has been aided by the drug trafficking.
- In the Maoist terror movements, extortion is yet again a common phenomenon. They have also indulged in illegal firearms trafficking to fund their movement. There have also been reports of cuts being enforced on drug yielding crops in the region.
- There are also a number of insurgent groups which over a period of time have morphed into crime syndicates.
- What began as an ideological movement is now merely a means of generating profit. This is especially the case with insurgent groups in Northeast India.

Conclusion

The evolving relationship between terrorism and crime poses significant challenges to the international community. There is a need to develop effective and tailor-made responses to the organised crime and terrorism, which address the underlying causes of the convergence at all levels, based on strong evidence, engagement with local actors, good governance, enhanced services delivery and capacity building and the incorporation of normative frameworks.

Best Answer: Jean Grey

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62. How is drug abuse a serious security threat in India? Explain. Which regions of India are the worst affected? What measures can be taken to address drug abuse? Suggest.

Introduction

Drug menace is a global problem. Drug abuse refers to the habit of regular intake of illegal drugs characterized by misuse of drugs. There is a thin line of difference between Drug abuse and addiction. In the case of drug abuse, the person may or may not be addicted to these harmful drugs. However, in the case of drug addiction, the person is severely addicted to these drugs. Thus, drug abuse may often lead to drug addiction.

Body

According to the NCRB report, some of the drugs are Ganja, Methaqualone, Ephedrine/Pseudo Ephedrine, Hashish and Heroin. Apart from these, the abuse of pharmaceutical drugs is also on the rise.

India is situated between two important drug supply centres: Golden Crescent (Iran, Afghanistan and Pakistan) and the Golden Triangle (Myanmar, Thailand, Laos and Myanmar). Because of this, India has always been in transit as well as gradually a consumption point. So it is difficult to say that drug abuse has come down in India.

Reasons for growing drug abuse in India:

- Presence of Golden crescent and triangle in the neighbourhood.
- Siphoning of drugs in the market even by the officials.
- Porous border and trafficking, illegal migrants.
- A large amount of black money in the market also helps in flourishing illegal businesses.
- The 'dark net' trend, although illegal, had raised concerns of attracting a new population of drug users as it avoids direct contact with criminals and law-enforcing authorities.
- Jobless growth and prevalence of unemployment.
- No proper implementation of laws.
- Corruption

Drug abuse a serious security threat in India:

Drugs smuggled from across the border poses a serious threat to India's internal security preparedness in the following ways:-

- The involvement of various terrorist groups and syndicates in drug trafficking leads to threats to the national security and sovereignty of states by the way of narco-terrorism.
- Provide finance for the terror activities in the country.
- Same links and sources can also be used for smuggling arms and creating terror in the area.
- Youth once engulfed into drugs are more vulnerable towards committing crimes for a small amount of money to afford drugs.
- It is considered to be the originator of petty offences as well as heinous crimes like smuggling of arms and ammunition and money laundering.
- Threat to the nation as it involves usage and generation of black money.

Regions of India are the worst affected:

Several drug-related crimes under the Narcotic Drugs and Psychotropic Substances (NDPS) Act has been on a rise. Of the total cases, more than half of them are contributed by states like Punjab, Maharashtra, Assam, Delhi, Haryana, Manipur, Mizoram, Sikkim, Kerala and Uttar Pradesh.

Measures can be taken to address drug abuse:

- **Secured Border:** Increased security on border areas and fencing to ensure that drugs don't enter India.
- **International Collaboration:** Need to effectively use SAARC and ASEAN platform for joint coordinated action against drugs trafficking.
- **Govt. Vigilantism:** The Anti-Narcotic Squads and Drug Enforcement Agencies should be more vigilant in controlling drug trafficking.
- **Legal Measures:** The Narcotic Drugs and Psychotropic Substances Act, 1985, should be enacted with stringent provisions to curb this menace. However, effective implementation and time-bound judicial process are the need of the hour.
- **Awareness Campaigns:** Anti-drug consumption campaign could be launched. NCB in collaboration with state agencies and concerned ministries should organize awareness campaigns.
- **Role of Media:** Mass media should play an important role in spreading awareness about the menace of drug abuse and not glorifying drug abuse.
- **Role of NGOs:** Govt. should fund more NGOs to work in this field.
- **De-addiction centres:** Make necessary and sufficient counselling and rehabilitation centres with required resources and trained health workers.

Conclusion

The impact of drug abuse is huge on the youth and it will also impact national security. So the government should work in tandem with the civil society to tame the menace of drug network in India and to save the future of young India.

Best Answer: Matthew D

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63. How serious is the problem of cross border smuggling in India? What are the associated security threats? Discuss.

Introduction

India shares border with Bangladesh, China, Pakistan, Nepal, Bhutan and Bangladesh. Border management becomes more important for the fact that India is like island of democracy between interrupted-stability facing countries.

Body

There is cross border smuggling problem of drugs, cattle, humans, artefacts, fake currency note etc. which continuously contribute directly or indirectly to economic, social and political stability of our country.

Indian Bangladesh border:

- India shares 4096.7 Km of its land border with Bangladesh. West Bengal, Assam, Meghalaya, Tripura and Mizoram are the States which share the border with Bangladesh.
- Cattle and other Smuggling: Cattle from as far as Haryana, UP, Bihar is taken to borders for grazing and then smuggled to Bangladesh. Bangladesh also imposes custom duty on these imports. Cattle confiscated on border alone are around one lakh annually. This way government is losing revenue of around 10000 crore annually.
- Along with cattle, smuggling of arms, and other essential items such as sugar, salt and diesel, human and narcotics trafficking, counterfeit Indian currency, kidnapping, and thefts are quite rampant along the India–Bangladesh border.

India Pakistan Border:

- The boundary runs from the hot Thar Desert in Rajasthan to the cold Himalayas in Jammu and Kashmir.
- Despite of fencing smuggling of drugs, mainly of Heroine is rampant at border of Punjab. It happens because villagers at both sides of border are accomplice to

such activities. Further, involvement of local politicians is also there in these cases.

- Illegal arms trading, fake currency notes have been a recurring problem along this border contributing majorly to the instability of this region.

India China Border:

- Large scale smuggling of Chinese electronic and other consumer goods take place through these border points.
- Supply of arms and money to trigger violence and terror acts are also witnessed here.

India Myanmar Boundary:

- The location of the boundary at the edge of the “Drugs golden triangle” facilitates the unrestricted illegal flows of drugs into Indian Territory. Heroin is the main item of drug trafficking. The bulk of heroin enters India through the border town of Moreh in Manipur. It is reported that the local insurgent groups are actively involved in drugs and arms trafficking.

India-Nepal border:

- Apart from insurgents and terrorists, many hard-core criminals pursued by Indian and Nepalese security forces escape across the open border. These anti-national elements indulge in illegal activities, such as smuggling of essential items and fake Indian currency, gun-running, and drugs and human trafficking.
- Wiki Leaks documents have revealed that the ISI has created a number of terrorist fronts in Nepal and has also pushed in men and explosives through the border to carry out terror attacks in India.

India Bhutan Border:

- Chinese made goods, Bhutanese cannabis, liquor and forest products are major items smuggled into India. Livestock, grocery items and fruits are smuggled out of India to Bhutan.

Associated security threats of cross border smuggling:

- Augmented cross-border terrorism, penetration and ex-filtration of armed militants.
- Smugglers, drug-traffickers are often in association with local offenders, lower rung political leaders and police officials and thus heavily impact the stability of the region.
- Sense of dissatisfaction is created and misused by hostile elements to create a feeling of ill will against the security forces and the Government.
- Vulnerable youth population is influenced and made to be hooked to drugs in exchange for unlawful activities.
- Girls and women are illegally trafficked with no facilities to call for help or contact family.
- Farmers shifting to poppy cultivation for better financial prospects.
- India's internal security challenges are increasingly being impacted by border security issues. Indian rebellious groups have for long been provided shelter across the nation's borders by hostile neighbours.

Measures taken:

- Border area development programme: The Department of Border Management, Ministry of Home Affairs has been executing a Border Area Development Programme (BADP) through convergence of Central/State/BADP/Local schemes and participatory approach and to develop security and wellbeing among the border populace.
- Border security forces and guarding forces have been employed all across the borders for better management and to check infiltration.
- Coordination committees between nations: These mechanisms serve as platforms for discussing issues of mutual concern like containing cross-border crimes, smuggling, and situation arising out of terrorist activities, at national and regional/local levels correspondingly.
- Awareness programs to alert youth and residents of the region. Various government schemes too have been implemented to provide employment and encourage beneficial growth.

Conclusion

A comprehensive approach to the Border Management, which focuses on socio- economic development of the people and promotion of wellbeing and a security environment in the border areas, is an immediate need being addressed by the government. Involving all stakeholders and responsible implementation of measures should be strengthened to effectively tackle these threats.

Best Answer: Matthew D

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64. What are paramilitary forces? What role do various paramilitary forces play in India's internal security? Explain.**Introduction**

A paramilitary is a semi-militarized force whose organizational structure, tactics, training, subculture, and (often) function are similar to those of a professional military. The term "Paramilitary forces" in India has not been defined in any acts or by authorities officially.

Body**Different paramilitary forces:**

- **The Assam Rifles (AR) - led by Indian Army officers reporting to the Ministry of Home Affairs:** they perform many roles including the provision of internal security under the control of the army through the conduct of counter insurgency and border security operations, provision of aid to the civilians in times of emergency, and the provision of communications, medical assistance and education in remote areas
- **The Special Frontier Force-led by Indian Army officers reporting to Indian Intelligence:** SFF was raised with covert operations in mind, mainly along the Indo-China border, however SFF has been fielded by R&AW and the Indian government in various covert and overt operation theatres.
- **Central Reserve Police Force (CRPF):** It is India's largest Central Armed Police Force and also considered to be World's largest Paramilitary Force. It functions under the authority of the Ministry of Home Affairs (MHA) of the Government of India. The CRPF has played an increasingly large role in India's general elections.
- **Border Security Force (BSF):** It is a Central Armed Police Force charged with guarding India's land border during peacetime and preventing transnational crime at the same, it has various active roles during an outbreak of war. It is a Union Government Agency under the administrative control of Ministry of Home Affairs
- **Indo-Tibetan Border Police (ITBP):** It is one of the CRPF. The ITBP was intended for deployment along India's border with Tibet
- **Central Industrial Security Force (CISF):** its duties are guarding sensitive governmental buildings, the Delhi Metro, and providing airport security. It is directly under the Union Ministry of Home Affairs.
- **Sashastra Seema Bal (SSB):** It is mandated with significant role of guarding and intelligence across borders, especially India-Nepal and India-Bhutan
- **National Security Guard (NSG):** It is a counter terrorism unit under the Indian Ministry of Home Affairs. The NSG is trained to conduct counter terrorist task to including counter hijacking tasks on land, sea, and air; Bomb disposal (search, detection and neutralization of IEDs); PBI (Post Blast Investigation) and Hostage Rescue missions.
- **Special Protection Group (SPG):** It is an armed force of the Union for providing proximate security to the Prime Minister of India and former Prime Ministers of India and members of their immediate families wherever in the world they are.

Conclusion

Paramilitary forces play their role in almost all the critical matters of internal security, from riots and insurgency to terrorism and smuggling. They are also an important part of defence intelligence required for internal security and integrity of India.

No Best Answer

65. Which agencies are responsible to detect and investigate financial frauds of serious nature? Discuss their constitution and mandate.

Introduction

Misappropriation of funds, employee theft and embezzlement, Ponzi schemes, payoffs and kickbacks, credit and debit card fraud, card skimming, investment schemes, mortgage and lending fraud, fake charity donations, internet fraud, consumer scams are some of the few financial frauds.

Body

Agencies responsible to detect and investigate financial frauds:

- **The Society for Worldwide Interbank Financial Telecommunication (SWIFT):** It provides a network that enables financial institutions worldwide to send and receive information about financial transactions in a secure, standardized and reliable environment.
- **Financial Action Task Force:** to develop policies to combat money laundering and curb terrorism financing.
- **Interpol:** Its broad mandate covers virtually every kind of crime, including crimes against humanity, child pornography, drug trafficking and production, political corruption, copyright infringement, and white-collar crime.

Agencies responsible to detect and investigate financial frauds in India:

- Reserve bank of India: banking fraud and mismatch in banking accounts are considered and investigated.
- Securities and exchanges board of India: Regulator SEBI has sought powers to conduct inspection of books of accounts of listed companies for contravention of any securities law and also to take direct action against the fraudsters. SEBI has proposed a heavy penalty for altering, destroying, mutilating, concealing or falsifying records and documents or other tangible objects with intent to obstruct, impede or influence a legal investigation.
- Financial intelligence unit: FIU-IND is the central national agency of India responsible for receiving, processing, analysing and disseminating information relating to suspect financial transactions.
- Serious Fraud Investigation Office: The Government in the backdrop of major failure of non-banking financial institutions, phenomenon of vanishing companies, plantation companies and the recent stock market scam had decided to set up Serious Fraud Investigation Office (SFIO), a multi-disciplinary organization to investigate corporate frauds.
- Directorate of Enforcement (ED): It is a law enforcement agency and economic intelligence agency responsible for enforcing economic laws and fighting economic crime in India. It is part of the Department of Revenue, Ministry of Finance.
- Central bureau of investigation: Many investigations, raids related finance and bank frauds can be taken with the consent of government.

Conclusion

With increasing bank frauds, online thefts, micro and macro finance theft there is a sheer necessity for robust legal framework on financial frauds.

No Best Answer