PLANE Imbalance of Energy Mix in Patien DAY and its consequences -> OUTUNE : 1- Introduction Thesis statement: Pakistan's energy mix is highly littled towards non--venewable resources that poses multiple economic and climate challenges to state. By having a well-proportioned energy mix, Pakistan cap progress on economic bronth witho damasing it climate-change goals Imbalanced energy mix in Paristan 2-Causes of Patistan's imbalanced energy mik. 3a-Uncoordinated chergy policy mating b-Over-reliance on possil puel c - Under-utilization of domestic renewable resourca. Consequences of having dis-proportionate 4energy min.



DATE: a- Eircular Debl. High cost of electricity. c- Questions climate change goals of Pakistan. d-Frequent power outages investing. due D unmet unmet " demods and disruption i Supplye-Trade depicit - Political unrests. 9 - Increased attempts of electricity theft 5 Way posward. to balancing energy mix a-Untapping the potential of lucal renewable resource. b - Exploring other indigenous ontions for energy generation. c- Invest in improving infrastructure and dismbubion of electricity d - Promising demand reduction and public. conservation in Conclusion.



DAY: ESSAY: DATE: Norway is known to be the biggest exporter of energy in world and its energy mix chilled my Mileresti - 10 uses less than 28 percent of ceal sources where energy generation while 71 percent. of renewable resource contribute to the generation. Comparing it to Patistan's energy mix shows a reversal of 180. Pakistan's energy mix is heavily imbalanced and mostly tilt towards bossil buels to is the result of uncoordinated energy policy making, too much dependence on bossilpute and · under utilization of abundance of domatic renewable resource. The resultant dispropo--tionate energy mix leads to circular dept, trade deficit, high electricity cours chronic shortages of domestic nonrenewable resources, hall back on climate change goals, and political unveits of angered public. By exploring other



DAY:\_ indigenous options, shifting to renewable the set of the design of the set of the design of the desi vesources, investing in maintenance and upgradation of energy infrarmuture and reducing demand for energy an help the country to have weller a balanced energy mix directive of economic growth with out comprimising me environment protection energy mix is energy mix is highly tilted towards non-renewable relaying that poses multiple economic and climate challenges to the state. By having a well-properticuted energy mix, Pakiltan can progress on conomic fronts without Repetition damaging its climate-maintenance geal According to Economic Survey of Pakistan (2022-2023), Pakistan's energy generation mix is weighing highly towards possil puels particularly coal 4 oil. The estimates given in the survey reports showed that 61% of energy is generated through burning possil puell, nuclear energy



Per-cent DAY :constitutes 1290 phydel energy has g share of 2100 while renewable sector has a staggering contribution of mere 30/2 the energy demand of the country is increasing because of economic activities, population growth. and rapid technological advancements. This leads to increased burden an grid har generalian and Papistan is coping with its increasing demand through new project. It parents attempt show a Luther Hilt towards enersy generalis through wal ite That road thermal project, which is causing burther impalance in the energy min. Thus, such policies will lead to devactating consequences on multifrant for polyingh The disproportion Pakitan i bacing is not derived but is result of contain policius and sugressies adopted by state During 1960, Lo 1980s, country provided with multiple opportunities was



10 balance its renewable and DATE:\_ pon-venewable verouvier of energy generality but over reliance of possil purch initially domestic and later imposed has streded mi energy mix into non-renewable domain more responsibility bes no every The has mostly been beginented and different departments have major over lap. The Uncoordinated Policy making allowed departments to modify it has per interest and hasprot resulted into 95 coherent energy policy bavouring. healthy energ mix. For example, Minishy of Production and Industry deals with industrial energy conservation while Ministry of FOOD, Agricultur and livestock overlee. energy production by biomass. The Ministry of Finance, Planning and Economic append is concerned with energy pricing and taxing. 50, different domains of a gme dealt sector deating with by different department enhanced relignie on kadihing. have



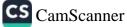
DATE: TTOPRETE BEAULT - COLLER means, that is thermal and hence caused imbalance in energy mix Mongwith bragmented handling of the policy, overreliance on possil bues is also a causal bactor of this depacte. During 19604 4 1980, Pakistan was provided with multiple opportunities to balance its renewable and non-renewable means of energy generation. But over--dependence on possil fuels, initially domestic and later imported, has stretched the energy min male into non-renewable real n. In Pakistan, 41 thermal independent power produces (IPR) are operational while Shydro IPPs are currently working Country Energy Overrieu, Report, International Atomic Energy Ageny, 2022) This shows how much Pakistan is dependent on possil fuels for meeting it energy armand that, disproportionality energy mi Another most important



DAY: DATE In second all and a second reason of impartne in energy min is under-utilization of domestic renarist provices by Pakistan Naturally, Pakisan is breved with abundance of solar, wind, hydel, biomass resources but, unpertrunstely, have has not be able to ublize the potential due to smetheral and economic hurcley. Allording to Pakistan Metereological Department, the exploitable potential of energy generation in Pakistan through wind turbines is 50,000 MWs while is currently producing 1335 MWC Sameways another estimate shows that if only 0.25% of the land of Balochistan were covered by solar panpels of 20% efficiency, this would be enough to provide electricity to entire county. Therefore, this untapped potential is being under. ussized due to stuctural and financial reason and resultantily thermal sector is dominating the energy generation



DATE EL DISTRICT TT: TTESTICES DAY: PETER S Such imbalance is not a domain. phenomenon of isolation but result into numerous consequences which the country is bacing now one of which i power sector circular debt. Dueto heavy reliance on imported lively per power generation, Pakistan is continuously spiraling in circular debt. It refers to the recurring problem of unpaid bills and delayed payments among government, power generation companies and disribution company According to the data of Central Power Purchasing Authority (CPD), in FY2013 circuler dept angs ground Rs 450 billion which reached to RS1148 billion in LOR Circulor debt start at Rs 2467 billion by FY2022. Economic Survey of Pakistan 2023). The debt is continuoully mounting on the national exchequer and is causing most of country, euchequer being used in debt servicing leaving sittle



biscal space for investment and development DATE: a sea of the sea of the sea of the sea of the Due to this spiral debt trap, another consequence of ionbalable energy price is hearly electricity prices. To purposh payments and decrease debt, the state inposes higher tamils on power unit consumption, thus, cousing a higher price of electricity. For example, National Electric Power Regulatory Agrinonity (NEPRA) in September (2021) decided to increase the electricity tranibb by 3. 28 pm ynu n to throw an additional burden of KS160 billion on the power consumer. The state authoring was bound to impose such nigh that tompts incruing electricity price to counter circular debt under guidance. Thus, more reliance IMF imposed possil fuels means more circular dept which will resultancy increase. consumer price of electricity for public already supposing from yearing Du proponional encosy mix



OWLE DAY because of heavy dependence on found puels plus new project in same section questions Pakistan's goals about climate change. Though contributing less than 1% (would Bank 12022) alban emission to global net emission, Pakitan is drashically impacted with reportusions y climate change in pare of 1005 droughts, stomsetc Further For example, Pakiltan has been viction of deluge of 2022 due to tonential rains caused by global warming According to World Bank(2011) erimates, deluge of 2022 incurred 30 billion dollars loss and destruction to Partian. So, purpoint the energy production in non-renewable sector like two projects of Thar coal will not only increase the net emission of carbon?s contraction but will help the state to are in pain beet by climate disaster hence, one of the consequence of cimbalaned enersy mix will be drashic climatic implications



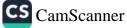
DAY :-of the country. DATE: As stated earlievy electricity availability contributer to standard of eiving in a county and Pakitan is currently bacing a populstion born. Due to increased population, demand with increasing and its with becoming difficult to meet such demands by an already checked power generation ystem. The rejult has been frequent power and ger and disruption in upply for longer times. Another contributive pactor & och payment of dues to Independent Power Producer ( PRU. High market prices (international) of possil buch for an already shugging economy makes it difficult to promptly pay in due, and thus, causing power outage So, atra disruption in supply of electricity and power outager can be lew if no energy mix of Pakitan would be belong



JTAD : JTAD DAY:\_ Impalance in energy mit lead, to excressive imposs of possilfuels to muet energy demands which in turn, er increases demand of import and leads to hade depicer. Energy sector y pakistan is highly dependent on cal, oil and gas impuried from other countries and it consibutes majorly to trade depict, gives by our less aports. Du given in a report of Central Asia Regional Economic (oppration Programme (carec) named Levergy Outlook 2030' Pakistan 15 a major importer of Kossil puels ( coal 4 oill ice it importer 15 million tops of coal to satisfy in demands. By utilizing doments resources, Pakistan can save upo \$420 million per annum therepare, a disproportionate energy mix also negatively impacts to stating of trade and larger imports computer majority to made definit



Along with these consequences, the impatinged energy mix also yields into recurrent and violent possibicity and social unvery in the worky. Do to heavy domination of one rector of energy resource imports increase which leads to increased tamp and, hence, the electricity becames queisble at high cast For the public, already cultaring. from inflation, tike in electricity prices is not taken as a good policy mention The verylt is public protests against such measure. This could been seen In the public protects of Palaitan when NEPRA increased the price by Rs 31- and people ignice out and blocked nymerous roods, burned the electricity bills and stoke were observed in many cities impaching economic activities. Providuly the protection were violent enough to attack and destroy the WAPDA buildings or at lest burted the WAPDA official. so,



DATE: DAY ---public protects are more likely to occur due to hiked prices y elability resultant of imbatione proving min High prices of energy glo leads to high probability of electricity theft. When chicked with hefty electricity bills, the public tries to accomposete ig needs of energy through illegio means like lampering with meth, installation of special devices to stop meters calculopian or a technique bornously known as 'Kunda' in Pakislan The rout cause of it is the over-relignce on expensive possil fuels in our energy mix that unlock a spiral of reperculsions budding out of heavy imports and high electricity poler. Though Pakistan smeanny under ne consequences of it Unhealthy energy mix but it int too late to make necessary amendagity First step to its energy mix



DAY :-of which I to balance renewable ----rejunces with non-renewable mer. The country & bleaved with numerous and plenty of natural velocities that can be used for power senerchen be it solor, hydel or wind power. According to World Bank (2020), ublixing jult 0.071% of two country, avea for photoworkaic (Joki) power generation would meet Patistan's current electricity demand so. the first step should be expending the renewable truly to 60 % of energy mit and attemptine to reduce and-based generation to 15%. This will not only lessen the burden en national exchequer but will be a positive contribution to environment or green energy policy of the rounny. Second major paint of hetersentin would be exploring only indigenas cources of energy gaves 1 go al gai juan. Like nuclear powerpr



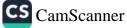
DATE:. shale (99) etc. Moreover, small hydel DAY :project are clean and in expensive source of energy generative and can cally be menipulated in Patistan; case. Such project can serve as a transinion of shibbing novenewable energy mix into bavor of renewable Moreover. by diversitying and expanding energy mix into various domain will balance the energy mix and will have the ability to cope with increasing energy demand. Thirdly, for efficient shifting, Pakistan should invest in updraking and republicitations intrastructure and dismubution channel. Rehabilitating and reconstruction will save the line loss of energy by and will ease get the demand pressure on generation apacity While updating and upgrading the dishubytion channed, will pave aut small. shipping towards renewable setting and b



DATE will the surreying will hisping to CALCENER OF THE points of energy theft which will bong mare people towards evergy converging with bill pa inerd lastly, demand reduction and conservation will promote the culture of accountability and rate energy are among public. People should be incensivize for green metering, by which one one hand they can dometrically half a concurrer needs and on enother excell energy can be cold to grid to antibut to national energy capicity. campaigns for energy concernation and promotion of austenity measures can also help reduce energy demand that will -provide breathing space to government making and implementing energy conversion In conclusion, Potsian is acing numerous challenges in its energy, economic and environment These challenges can be rectard Sector



DATE mak to unhealthy energy mit he demine thermal dominating all other counter of energy generation. Such an unhealthy hit has been impacking eraning of the earning in the pain of circular det , heavy imports and made depicit while impacing country? green energy and climate change good. Furthermare, the impact con be helt on individual level in the par form of energy price bike, energy cutages and public divensions among consumer. in any country, the state of energy closely concluder with economy. Grown in energy consumption and economic growth hime bollowed almost identical parterns. The Sun has not let. So. by adopting and implementing strategies to balance out energy mix can serve the country in long-term instead of phasing aut possil buels, Patistan should believe in enercy mix with non-renewable sector



DATE domestic recourses. Only when he citizen ar ave and moniated reclater Challente will an OD of first standy Marks are awarded in mock exams only / Keep writing on various themes Minor grammar mistakes, rest is good

