Improving Energy Regulatory Framework of Pakistan

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Abstract- The primary objective of this study was to investigate that either Pakistan needs or not a single regulatory authority for its energy sector by means of integrating Oil & Gas Regulatory Authority (OGRA), National Electric Power Regulatory Authority (NEPRA) and the regulatory part of Directorate General of Petroleum Concessions (DGPC) in to a single entity "National Energy Market Regulatory Authority" (NEMRA). To achieve this objective of research, descriptive analysis along with binary logistic regression technique were used. The results showed that due to the current performance of existing energy regulatory framework it is necessary to establish a single autonomous energy regulatory authority (NEMRA) for the energy sector of Pakistan in order to put it out of crises towards grooming and prosperity.

Keywords: Energy regulatory framework; NEMRA; NEPRA; OGRA; Pakistan.

1. Introduction

For an economy energy is the life line as for socio-economic development it is the most critical instrument and a recognized important strategic commodity [1]. There is a mutual inter- dependence between energy sector and economic activities [2]. It is concluded from different researches that electricity is the most vital source for economic growth followed by gas [3]. Similarly in Pakistan the development of energy sector is directly related to economic growth. Any shortage of energy will threat the economic growth of this country. Different sources of energy have different effects on Pakistan's economic growth. Among these, the impacts of electricity and petroleum products on the national economy are high and statistically significant. Natural gas is another crucial source of energy for Pakistan [4].

Energy crisis is defined as a shortage of electricity, oil and natural gas due to the supply shortfall or price rise [5]. Currently in Pakistan the demand for energy is higher than indigenous supplies. With the passage of time this gap is increasing as the supply of energy is not increasing with a speed to meet this demand. Thus Pakistan is in front of a serious problem of "energy shortage" [6]. Subsidizes, improper maintenance, under pricing and overstaffing are the common problems of energy sector in Pakistan [7]. The current crises in gas sector are due to technical and governance reasons [8]. During the preceding three decades no major discovery of oil has occurred in Pakistan. It is probable that the demand for oil will become double during 2015 and quadruple in 2025. This would result in a shocking trade deficit [9]. The whole progress and development of Pakistan is hindered due to energy crises. Currently Pakistan receives its most of electric power from thermal sources thus the prices of electricity have gone up with a rocket speed.

This crisis is deep-rooted with governance issues, unsatisfactory legislation, lack of energy conservation and technical as well as managerial incompetence. A large number of institutions and ministries are involved to deal with energy policy of the country from different aspects. As a result, a conflict of interests occur which has a negative effect on the preparation and implementation of a clear and sustainable policy framework [10]. Among the commercial energy resources, natural gas, oil and electricity are the major sources for consumption in Pakistan [11].

Energy market deals with the trade of energy commodities. In energy market there exists a regulator which comes in between the supply and demand side in order to protect the interest of all players of the market with an efficient way. There is no single energy market in Pakistan by means of a single energy regulatory authority. OGRA & NEPRA are the regulators of Oil & Gas and Electric Power markets of Pakistan respectively. The mid and downstream of Oil and gas market is regulated by Oil and Gas regulatory authority (OGRA). Directorate General of Petroleum Concessions (DGPC) of Policy Wing (Ministry of Petroleum and Natural Resources) regulates the upstream oil & gas activities. National Electric Power Regulatory Authority (NEPRA) is the monitoring and controlling authority of electric power market in Pakistan.

There is no single integrated energy regulatory authority in Pakistan. The responsibilities and accountabilities of these regulatory authorities are dispersed, and they often contradict each other. The ultimate result is imbalance among the Oil & Gas and Electric power sectors. Now due to the current performance of existing energy regulatory framework a question arises in order to overcome this deficiency;

Is a single autonomous NEMRA "National Energy Market Regulatory Authority" by means of integrating OGRA (Oil & Gas Regulatory Authority), NEPRA (National Electric Power Regulatory Authority) and the Regulatory part of DGPC (Directorate General of Petroleum Concessions) in to a single entity essential in Pakistan?

The objectives of this study are:
- ➢ To determine that either Pakistan needs or not a single autonomous energy regulatory authority for its energy sector.
- ➢ To evaluate the performance of current energy regulatory framework of Pakistan.
- ➢ To develop a model for improving energy regulatory framework of Pakistan.

2. Literature Review

Regulation is the sustained and focused attempt to alter the behavior of others according to defined standards or purposes with the intension of producing a broadly identified outcome or outcomes [12]. Enforcement of regulations are necessary to promote competition [13]. The three concepts of liberalization, independent regulation and supra-national integration of electricity and natural gas markets stem from the EU Internal Market project and are inter-related [14]. The shock of supply shortages which occurred as like in California during 2000 was due to institutional and regulatory failures. Thus proper regulatory arrangements are necessary for attaining energy supply security [15]. During 1980s & 90s high level of liberalization was given to energy markets. After this liberalization power cuts occurred in California although it was one of the advanced economies. After the tripling of oil prices in 1999 it has realized that energy market cannot be treated for competition as like any other industry. Regulators and new institutions are required to play dominant role during regulating and promoting competition [16]. There are three reasons for regulatory intervention which are to promote public interest, to prevent market failures and to restrict or remove anti-competitive practices. The regulator needs functional and financial independence for the effective accomplishment of regulations [17]. The unavoidable player of an open energy market is the regulatory authority as it prevents the misuse of market power [18]. Independent regulatory agency is an agency which separates both organizationally and lawfully from suppliers and government [19]. In European Union "national regulatory authority" means a public authority established in a Member State pursuant to Directives 2003/54/EC and 2003/55/EC, according to which, member states shall designate one or more competent bodies with the function of regulatory authorities, to ensure non discrimination, effective competition and the efficient functioning of the gas and electricity market and in particular to oversee the day-to-day application of the provisions of Directives 2003/54/EC and 2003/55/EC and Regulation (EC) No 1228/2003 in that respect [20]. During 1980s and 1990s governments and parliaments in Western Europe confronted higher pressures and problems in energy regulation. These were the implementation of desirable but unpopular policies among public, technical knowledge requirements, lack of confidence in players vital for effective policies and increased tendency for supra-national regulations. Thus the elected officials gave the authority to Independent regulatory agencies for dealing with these functions [21]. During 1980s different countries started to adopt U.S regulation model as these countries were allowing privatization in different utility sectors. Regulatory authorities are established for the purpose to achieve "fair and reasonable" prices, supply security, high quality service and unbiased access to infrastructure. For a well-functioning regulatory authority the interesting aspects are the industry which it covers, boundaries of control between the regulator and relevant ministry as well as the relationship with other regulatory authorities. Generally multi-industry regulator is considered to be more effective than industry specific regulator. At least a single regulator is necessary in each sector. Thus a single regulatory authority

for energy sector is valuable than separate regulators for oil, gas and electricity [22]. Regulatory authority has key role for energy sectors of economies which are shifting from state-based to market-based strategy [23]. In Western Europe the concept of regulatory set up is rising and the main feature of this set-up is independent regulatory authority [24]. Majority of the countries in European Union have established sector-specific autonomous regulatory authorities. Independent regulatory authorities are necessary to improve regulation [25]. National regulators of EU member countries have issues solving expertise. These regulators are linked with national constituencies of their respective countries and have control over the access to market [26]. Existing regulatory frameworks of Northern Africa and Middle Eastern countries show that those countries having autonomous regulatory authorities possess credible regulatory frameworks with respect to those countries where such bodies do not exist [27]. For the protection of autonomy of national regulators of EU member states, it is necessary that these regulators should have separate annual budgets allocations along with the independent implementation power [28]. The overall role of the regulatory authority is to balance the consumers protection and encouragement of investors while keeping in view the objectives of the government. To perform according to the standards, the energy regulatory authority must be given tools and resources in terms of high quality staff, law and financial resources [29]. The key role of an energy regulator should be in the overall national interest of an economy. For sectoral governance of energy market the complete grip of government as well as of private stakeholders is not appropriate. There is a considerable momentum for supranational regulatory framework in Europe. During March 2000, CEER (Council of European Energy Regulators) was established as for the purpose to bring together the regulatory authorities of energy sector from all over Europe. Similarly ERGEG (European Regulators Group for Electricity and GAS) was instituted in November 2003 for bringing together the informal co-operation between energy regulators of EU in to a formal one [30]. German government pursued towards a single regulatory authority for Electricity, Gas, Telecommunication and Post services (REGTP) because neither the performance of gas nor the electricity markets was good [31]. Energy regulation is playing an important role for the development of China's economy. It is the priority of China to reform the regulatory system of its energy sector as for energy management, regulation is vital. For problems related to energy the primary solution is good energy regulation. The separation of regulatory and political authorities is fruitful for energy sector as regulatory department and policy making can become independent of each other and thus regulations will become effective due to decrease in political interference. In present China has one dimensional regulator which regulates the electric power market. Natural gas and oil sector has no regulatory authority to control. As like US, China needs to transform the current regulator of electricity in to a single comprehensive market regulatory authority for oil, gas and electricity [32]. Turkey has started a reforming program after 2001 in its energy sector which needed restructuring, liberalization and privatization. EMRA (Energy Market Regulatory Authority) has established in Turkey as an independent regulatory authority for energy market. The purpose of this autonomous regulator is to make and maintain the energy market competitive, stable, transparent and financially strong. EMRA has both financial and administrative independence. Turkey needs to establish a professional appeal body with proper knowledge and competencies for resolving energy regulatory issues [33].

Energy Sector Task Force (Friends of Democratic Pakistan) prepared a report (Integrated Energy Sector Recovery Report & Plan) in 2010. In this report the idea of a single regulatory authority for Pakistan was proposed that it should merge the current regulatory authorities of energy sector in to a single entity. Energy sector of Pakistan lacks a uniform regulation which results in disturbance between electricity and gas sectors. The inconsistent regulations between NEPRA and OGRA send confused message to investors and create disharmony in pricing strategies between electricity and gas sectors. NEPRA and OGRA lack autonomy and clarity of roles [34].

Stern and Holder in 1999 derived a set of six elements as criteria for determining the performance of a regulatory framework in Asian developing countries including Pakistan. This set of criteria has divided in to two sub-sets which are formal and informal aspects. The formal subset consists of further three factors which are clarity of roles and objectives, autonomy and accountability while the informal aspect consists of participation, transparency and predictability. The formal aspect of regulation is related mainly to institutional design while the informal aspect deals with regulatory practices and processes [35].

In the present study, we have extended and applied the work of Stern and Holder to whole energy sector of Pakistan as to understand that either it needs or not a single energy regulator which has proposed by Integrated Energy Sector Recovery Report & Plan.

3. Theoretical Framework

Dependent Variable

The dependent variable of this research is the establishment of a single regulatory authority (NEMRA) in Pakistan. NEMRA is proposed to be made by integrating NEPRA, OGRA and the regulatory part of DGPC. The dependent variable of this study is a dummy variable which is either to establish or not NEMRA.

Independent Variable

The independent variable for this study is the current performance of existing energy regulatory framework which means current performances of OGRA and NEPRA. The independent variable has six dimensions which are: Clarity of roles and objectives, Autonomy, Accountability, Participation, Transparency and Predictability as given in Figure 1.
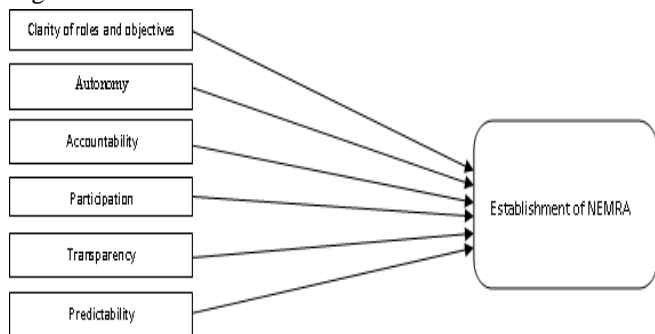

Fig. 1. Schematic Diagram

Hypothesis
Hypothesis 1

There is an overall relationship between performance indicators current levels and the odd ratio to establish NEMRA.

Hypothesis 1$_a$

Due to the current low level of clarity of roles and objectives in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_b$

Due to the current low level of autonomy in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_c$

Due to the current low level of accountability in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_d$

Due to the current low level of participation of stakeholders (during decision making) in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_e$

Due to the current low level of transparency in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_f$

Due to the current low level of predictability in existing energy regulatory framework there is a support for a high odd ratio to establish NEMRA.

4. Research Methodology

It was a field study survey research. The data of this research was cross-sectional primary data obtained through questionnaires from energy sector experts of Pakistan. The questionnaire of this study was a combination of both close and open ended questions. The population for this research was all current and ex-professionals of energy sector of Pakistan. A simple random sample was selected for analysis. The sample was all those energy professionals who were working or had worked in BPS 17 (Basic Pay Scale) or above in energy sector for four or more years. If the respondent was working in private sector the designation was equal to BPS 17 or above. A total number of 108 questionnaires were distributed among which 76 were collected with a response rate of 70.37%. Finally a sample of 61 respondents was selected for analysis.

Research Instrument

The questionnaire used during this research was a combination of three parts generally (parts I, II & III). Further on part I had three sections (sections A, B & C). Section A of part I was about general information of respondents, section B was about the current performances of OGRA & NEPRA and section C of this part was about the important functions related to an energy regulator. Part II was about the establishment of NEMRA in Pakistan and in Part III there were open ended questions. Section B of the research instrument used in this study was already designed and used by Stern and Holder [35]. Due to logistic regression analysis all the dimensions of performance criteria were converted to nominal scale therefore Cronbach's alpha was calculated which occurred in the acceptable range of 0.744. Section B of part I in the questionnaire was the independent variable and part II of the questionnaire was the dependent variable. Likert scale method was used as a measure to collect data about independent variable, 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree). While a nominal scale (yes/no) was used to measure dependent variable. The dependent variable of this research was a dummy variable and the data obtained for it was converted to 0, 1 where 0 for No and 1 for yes answers. Further on there were six questions related to clarity of roles and objectives, four questions of autonomy, seven questions about accountability, five questions of participation, five questions of transparency and five questions relevant to predictability. All the thirty two questions about independent variable (current performance of energy regulatory framework) were treated on likert scale. Among all the six performance indicators questions, there were 8 negative sense questions (Q: 3,4,6,8,10,22,28 & 29) out of 32 questions, first of all these were converted in to positive sense to make the analysis clear and easy. Then the mean value of each performance indicator was determined. For descriptive analysis a weighted mean value of each performance indicator was calculated and compared its level with a maximum level of 5. A level of 5 was chosen as a standard value because the maximum weighted mean of each performance indicator was 5. For logistic regression analysis, likert scale data was also converted to six dummy variables.

If the mean value of a performance indicator was above three (neutral value of questionnaire) it was assigned as 1 while if it was 3 or below 3 then it was termed as 0.

Data Analysis

There were two methods adopted for data analysis:

➤ Descriptive analysis
➤ Logistic regression analysis

Following is the equation of logit model:

$$L_i = \ln (P_i/1-P_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu_i \qquad (1)$$

Where $P_i/1- P_i$ is the odd ratio, in this study it is the probability ratio (NEMRA should be established / should not be established).

5. Empirical Results

Current Performance criteria indicators

The mean value of each performance indicator was determined in MS Excel for the responses of each respondent. Then a list of mean values for all indicators was analyzed through SPSS. Thus a mean of mean values (weighted mean) for each indicator was calculated along with standard deviation in addition to minimum and maximum values given in table 1 Although except autonomy each of the remaining variables have values higher than 3 but much below than 5 which mean that the remaining five indicators are in the acceptable range but with a low level of performances. This shows that the regulatory framework of Pakistan needs improvement.

61% of the sample study respondents were in favor to establish NEMRA in Pakistan while 39% respondents were against the idea to establish NEMRA. Among a total number of 61 respondents, 37 supported the idea of single regulator for energy in the context of Pakistan. According to the respondents of this study, "the energy regulatory authorities of Pakistan did not perform what was expecting from these. Regulators current and past performances are the reasons among others for energy crises in Pakistan. Proper communication does not exist between these authorities which is one of the major causes of energy crises here in this country.

The regulators have failed to set such regulation mechanisms which not only attract investors but also safeguards the interest of end consumers. In Pakistan energy prices are completely subsidized by the government. Pricing mechanism is not in accordance to applicable international standards. The Sui gas companies having transmission and distribution licenses generally enjoy fix gas pricing on the basis of their revenue requirements by taking rate of return on their assets. Cost plus return basis is also used for electricity pricing in Pakistan. Cost plus return formula will further increase the electricity cost which will ultimately leads towards major disaster. The electricity pricing mechanism in Pakistan is primarily evolved on the basis of accounting techniques without considering the cost externalities of each technology like energy security, environmental impacts, developments of allied infrastructure, creation of employment opportunities and development of local industries.There is a strong need to integrate current regulatory authorities in to a single regulator of energy".

Table 1. Performance Indicators of Existing Regulatory Framework

Indicator	N	Minimum	Maximum	Weighted Mean	Standard Devation
Clarity of Roles and Objectives	61	2.00	4.50	3.32	0.5232
Autonomy	61	1.50	5.00	2.97	0.7049
Participation	61	1.20	5.00	3.33	0.8114
Accountability	61	1.71	4.71	3.46	0.6246
Transparency	61	1.60	5.00	3.46	0.8217
Predictability	61	1.60	5.00	3.51	0.6371

Logistic Regression Analysis

By means of SPSS, simultaneous binary logistic regression was used to run the model in which all the predictor variables (basically six dimensions of independent variable) were entered simultaneously. The results showed by SPSS (PASW statistics 18) are presented in Table 2. There were 61 cases presented for analysis and SPSS accepted all of these cases with a percentage of 100%. While 10% significance level was set as a criterion for accepting or rejecting null hypothesizes.

Research Finding

Hypothesis 1. proposing an overall relationship between low level of current performance indicators and the tendency to integrate current regulatory authorities in to NEMRA is proved by the results. The p value of model Chi square was less than significance level (p < .10). Therefore the null hypothesis (Ho) was rejected and alternative hypothesis (H1) was accepted means that there is an overall relationship between performance indicators current levels and the odd ratio to establish NEMRA.

Hypothesis 1a. proposing a negative relationship between clarity of roles and objectives and the tendency to integrate current regulatory authorities in to NEMRA is proved by the results. The p value for clarity or roles and objectives was less than significance level (0.063< 0.10, β = - 1.727).

Table 2. Logistic Regression Results

Logistic regression (Enter method)					
Omnibus tests of model coefficients					
Model	Chi square		d.f	Sig	
Model	36.528		6	0.000	
Model Summary					
-2Log likelihood	45.244				
Nagelkerke R^2	0.610				
Classification Table					
Overall percentage	83.6 %				
Variables in the equation					
Predictor	B	S.E	Wald	Sig	Exp(B)
Clarity of roles & objectives	-1.727	0.929	3.456	0.063	0.178
Autonomy	-1.928	0.791	5.939	0.015	0.145
Accountability	-0.795	0.936	0.722	0.396	0.452
Participation	-0.043	1.226	0.001	0.972	0.044
Transparency	-0.832	1.112	0.560	0.454	0.435
Predictability	-1.848	1.004	3.385	0.066	0.158
Constant	4.866	1.396	12.152	0.000	129.745
N = 61 (100%)	Overall percentage (beginning block) = 60.7 %		Cut value = 0.500		

Therefore the null hypothesis (Ho$_a$) was rejected and alternative hypothesis (H1$_a$) was accepted means that due to current low level of clarity of roles and objectives in existing regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_b$ proposing a negative relationship between autonomy and the tendency to integrate current regulatory authorities in to NEMRA is proved by the results. The p value for autonomy was less than significance level (0.015 < 0.10, β = - 1.928). Therefore the null hypothesis (Ho$_b$) was rejected and alternative hypothesis (H1$_b$) was accepted means that due to current low level of autonomy in existing regulatory framework there is a support for a high odd ratio to establish NEMRA.

Hypothesis 1$_c$ proposing a negative relationship between accountability and the tendency to integrate current regulatory authorities in to NEMRA is not proved by the results. The p value for accountability was higher than significance level (0.396 > 0.10). Therefore the null hypothesis (Ho$_c$) was accepted means that due to the current low level of accountability in existing regulatory framework there is no support for a high odd ratio to establish NEMRA.

Hypothesis 1$_d$ proposing a negative relationship between participation and the tendency to integrate current regulatory authorities in to NEMRA is not proved by the results. The p value for participation was higher than significance level (0.972 > 0.10). Therefore the null hypothesis (Ho$_d$) was accepted means that due to the current low level of participation in existing regulatory framework there is no support for a high odd ratio to establish NEMRA.

Hypothesis 1$_e$ proposing a negative relationship between transparency and the tendency to integrate current regulatory authorities in to NEMRA is not proved by the results. The p value for accountability was higher than significance level (0.454 > 0.10). Therefore the null hypothesis (Ho$_e$) was accepted means that due to current low level of transparency in existing regulatory framework there is no support for a high odd ratio to establish NEMRA.

Hypothesis 1$_f$ proposing a negative relationship between predictability and the tendency to integrate current regulatory authorities in to NEMRA is proved by the results. The p value for predictability was less than signficance level (0.066 < 0.10, β = - 1.848). Therefore the null hypothesis (Ho$_f$) was rejected and alternative hypothesis (H1$_f$) was accepted means that due to current low level of predictability in existing regulatory framework, there is a support for a high odd ratio to establish NEMRA.

Forward Stepwise Logistic Regression

Forward stepwise logistic regression method was also used in order to identify the relevant variables step by step. According to the results of Forward Stepwise Logistic regression analysis given in Table 3, the most important predictor associated with the odd ratio of this study is autonomy followed by clarity of roles & objectives and predictability respectively.

6. Discussion

The research finding shows that there is a need to establish an autonomous single energy regulatory authority in Pakistan as to enhance the current and future performance of the sector. After in depth analysis it has observed that the complete merging of OGRA and NEPRA is a very difficult task as a sign of danger exists for the clash of two different organizational cultures. Instead of these all, the easy and possible option is to establish NEMRA between OGRA & NEPRA and respective ministries while OGRA and NEPRA should be its two units for oil & gas and power markets as given in Figure 2 First of all current OGRA and the regulatory part of DGPC should be merged completely in to a single body "OGRA" so, that the regulator of oil & gas market will deal all activities of up, mid and downstream.

Table 3. Forward Stepwise Logistic Regression Results

Forward stepwise logistic regression					
Variables in the equation					
Predictor	B	S.E	Wald	Sig	Exp(B)
Step1[a] Autonomy	-2.554	0.631	16.371	0.000	0.078
Constant	1.609	0.447	12.951	0.000	5.000
Step 2[b] Clarity of roles & objectives	-2.198	0.768	8.198	0.004	0.111
Autonomy	-2.080	0.693	9.018	0.003	0.125
Constant	2.781	0.725	14.696	0.000	16.135
Step 3[c] Clarity of roles & objectives	-1.943	0.807	5.800	0.016	0.143
Autonomy	-2.025	0.757	7.161	0.007	0.132
Predictability	-2.024	0.934	4.696	0.030	0.132
Constant	4.065	1.048	15.049	0.000	58.270

Variable entered on step 1 : Autonomy (Nagelkerke $R^2 = 0.374$)

Variable entered on step 2 : clarity of roles & objectives (Nagelkerke $R^2 = 0.515$)

Variable entered on step 3 : Predictability (Nagelkerke $R^2 = 0.590$)

National Energy Market Regulatory authority should be established above the OGRA and NEPRA. NEMRA should have a nine member's regulatory board as like Turkey's energy market regulatory authority. The decision making powers of overall energy regulation should be handed to NEMRA. Among the nine members of regulatory board, there will be a chairman and four members from of each oil & gas and power sectors respectively (1 chairman + 4 oil gas members +4 power members). The appointments and dismissals of the board chairman and members should be the duty of parliament both government and oppositions not only the government and for this there should be solid reasons.

Any disorder in this may be challenged. For the accountability of NEMRA there should be a professional and competent appeal body (Energy Court) under the umbrella of Supreme Court of Pakistan where the decisions of NEMRA should be challenged by consumers, firms and government. Any issue related to OGRA and NEPRA could be challenged in the energy court on the behalf of NEMRA rather than OGRA and NEPRA. Any appointments in OGRA and NEPRA should be the duty of NEMRA. NEMRA should be independent of government for its decisions, financing and appointments etc.
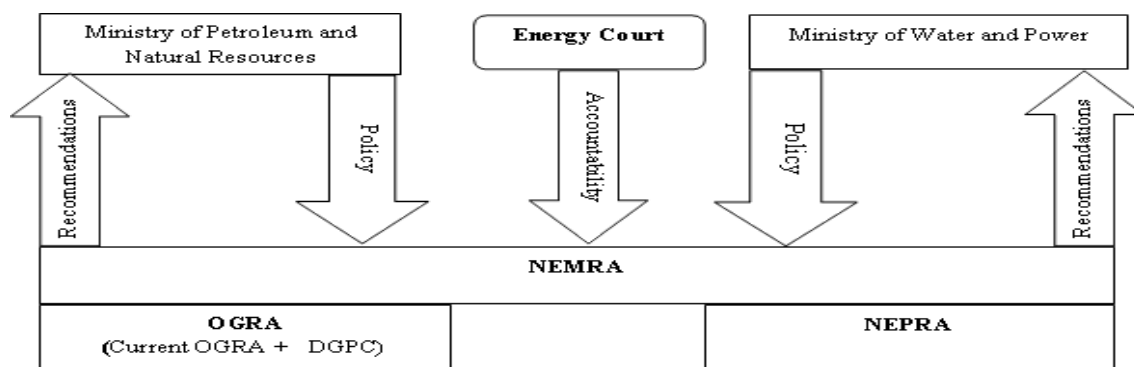

Figure 2. Proposed Energy Regulatory Framework Model for Pakistan

7. Conclusion

From this research it is concluded that Pakistan needs a single independent regulatory authority (NEMRA) to overcome energy crises. The concept of a single energy regulatory authority was proposed by [34] and this research has proved it in light of criteria designed by Stern and Holder [35]**.** Thus the current performance of existing energy regulatory framework of Pakistan demands to establish well functional regulatory authority for energy sector. The energy crises in the country is primarily started due to the

construction of costly oil based power plants and without taking appropriate measures for the revenue collection and other economic development. Pakistan has one of the highest oil based power generation capacity in the world and that depicts the picture of its suffering. It is the time to review the current energy mix of Pakistan and increase the shares of renewable energy as the country has very much potential of solar, hydro, wind and biomass resources.Thus Pakistan needs to establish NEMRA while NEMRA should further need to encourage the development of renewable energy

market. Thus this is the possible way to get rid of current energy crises here in Pakistan. So in the light of above discussion it may be fruitful to investigate that how the proposed NEMRA should develop renewable energy market in Pakistan as to get cheap and clean energy. There is also a need to work on the establishment of a single energy ministry in Pakistan as to make a unified energy policy.

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Appendix (Research Instrument)

PART 1

SECTION : A:-   GENERAL INFORMATION:

SECTION: B:- Please select the right option for current performance of Regulator in light of your knowledge and experience.

	Current performance of regulator	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A	**Clarity of Roles and Objectives**					
1	Primary legislation has clearly defined the duties and functions of regulator.					
2	Regulator has a clear decision making role rather than advisory body to ministry.					
3	There is ambiguity during performing functions between regulator and relevant ministry.					
4	There are certain functions which are jointly performed by regulator and respective ministry.					
5	It is clearly defined in regulation that which entity (regulator & ministry) is responsible for which regulatory function.					
6	Regulator has also responsibility for commercial activities.					
B	**Autonomy**					
7	Regulator is independent of government while performing its functions.					
8	Government has a strong influence during the appointments and dismissals of regulatory body members.					
9	Regulator is free of government to finance itself.					

10	Regulator needs the approval of government for funding.					
C	**Accountability**					
11	There is a formal mechanism for consumers and regulated firms to challenge the decisions of regulator.					
12	The effected party has also a legal right of compensation against regulator.					
13	The effected party can challenge regulatory decision through informal channel of media or ministries					
14	Regulator is accountable for its decisions to parliament.					
15	Members of the regulator can be dismissed if they fail to fulfill their duties.					
16	There is a facility under primary law for judicial review of regulator's decisions.					
17	The appeal mechanism for judicial review against the regulator's decision is effective.					
D	**Participation**					
18	Regulator formally involves regulated firms, consumers and other stakeholders to understand their proposed approach before taking major decisions.					
19	Regulator makes consultation (discussions with firms, government and consumers) responses public either in full or in a summary of responses.					
20	Regulator comments publicly on points made in consultation responses.					
21	Consultation responses influence the final decision of regulator.					
22	Firms and consumers are not involved in regulatory decision making and processes.					
E	**Transparency**					
23	Major documents of regulator (licenses etc.) are in public view.					
24	Regulator publishes major decisions.					
25	Regulator publishes reasons behind major decisions.					
26	If regulator does not publish either decisions or reasons then firms are told of the reasons for major decisions.					
27	The publication of major decisions / reasons is compulsory for regulator.					
F	**Predictability**					
28	Regulator's duties and functions can be changed easily.					
29	The key regulatory documents (e.g. licenses, authorizations, franchise contracts, etc.) can be changed easily.					
30	Regulator has formally set out the regulatory principles (e.g. on the procedural approach to tariff reviews, the definition of the rate base or the rate of return which a firm should be allowed to earn)					
31	Regulator has established a consistent approach for its decisions.					
32	A time table for regulatory events is published every year by the regulator.					

SECTION : C

Rank the following statements about the energy regulatory authority in the order of importance in terms of your own energy professional experience.

1	2	3	4

Functions of an energy regulatory authority are

● Setting performance standards   _____

● Monitoring and controlling the performance of market _____

● Establishing energy prices _____

● Deciding disputes among stakeholders   _____

PART: II

Do you think that a single independent "National Energy Market Regulatory Authority" by means of integrating OGRA, NEPRA and Regulatory Part of DGPC into a single entity is essential in Pakistan?

Yes _____   No _____

PART: III

1   Give your Comments on energy pricing mechanism in Pakistan.

2   Please Comments at energy crises in Pakistan on the basis of current energy regulatory system.