

Diffusion of Regulatory Knowledge: A case study of transnational regulatory networks

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Abstract-- In 2001, the Energy Regulators Regional Association (ERRA) was established in Budapest, Hungary to foster cooperation and education necessary for the leaders and the staff of new national regulatory authorities (NRA) in Eastern Europe and in the Commonwealth of Independent States. This paper examines the diffusion of regulatory knowledge from the US and EU to ERRA members. The research is based on 31 interviews with current and past ERRA members, regulatory staff and individuals closely associated and knowledgeable about ERRA's formation and its activities; seventeen of these were either current or former leaders of their respective regulatory institutions. This provides a theoretically grounded perspective of how regulatory knowledge is diffused to ERRA members. The rise of a new international regulatory regime – regulatory capitalism, supported by an approach of sectoral governance, is demonstrated to be intertwined with the global diffusion of NRAs and the establishment of best practices reliant on a system of formal and informal learning and trust between regulators.

Index Terms-- privatization, educational activities, diffusion processes, learning, electricity supply deregulation,

I. INTRODUCTION: TRANSNATIONAL REGULATIONS

The growth of national regulatory authorities (NRA) during the 1990s, in Central Eastern Europe (CEE), South East Europe (SEE) and the Commonwealth of Independent States (CIS) parallels the creation of market based economies and foreign investment in the energy sector. The United States government was central in assisting the establishment and training of these new regulatory authorities. In 1997, the Energy Regulators Regional Association (ERRA) was established in Budapest, Hungary to foster cooperation and educate leaders and staff of these new energy NRAs. ERRA was, and still is, central in this knowledge-flow of regulatory best practices and training of sector participants.

ERRA was supported by the United States Agency for International Development (USAID), which financially supported member participation and the operation of ERRA's Secretariat. The National Association of Regulatory Utility Commissioners of the United States (NARUC) worked closely with USAID to ensure ERRA worked with experienced regulators.

The examination of the diffusion of regulatory knowledge and practices will situate itself in a set of literature that

understands the role that transnational formal and informal organizations play in the development and practices of NRAs [1–10]. The discussion will extend a concept that perceives of a single European regulatory space, which is marked by the rise of regulatory capitalism [11] where sectoral governance rests within independent institutions.

This article will demonstrate energy sectoral governance [e.g. 4] is a phenomenon extending beyond the European Union. Since the mid-1990s three converging factors altered state practices and shaped the diffusion of regulatory knowledge: (1) privatization of energy companies, (2) NRAs represent a global transition towards governance [12], (3) creation and embedding of ERRA members into a transnational regulatory network [1], was an organic attempt, encouraged by local regulators, for the US – and now the EU – to support good governance to facilitate private investment in a critical economic sector.

Regulatory practices are contextualized in relation to social, political and economic conditions in each country. ERRA represents the development of a best practice network with strong allowance for localized and contextualized solutions. Overall, the building of NRAs represent a convergence of top-down, bottom-up and horizontal diffusion requiring professional regulatory knowledge produced through cooperation and learning in a transnational NRA network.

The article will first explore the broader process of a professional regulatory regime within a given period of time. The instillation of a new regulatory regime is reliant on the transformation within the state from government to governance. The cumulative transformation within the state alters the energy sector - regulation becomes not just rule making - but functions as a buffer of pressures and interests from politicians, industrialists and consumers.

The second part of this article addresses why NRAs are motivated to share their experiences. The reproduction of high quality regulatory practice and spreading of knowledge, over the long term, lends support to other energy NRAs and their ability to develop stable and predictable regulatory environments. The methodology of the study is described, followed by a case study of ERRA's history and evolution into an organization based on sharing of regulatory practices and formal and informal education or regulatory knowledge. This includes cooperation with other international regulatory association, CEER and NARUC, thereby contributing to further sharing and spreading of international regulatory practices. The case study highlights that regulators require

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training, education and research to support their decision making process.

II. THEORETICAL: DIFFUSION NETWORKS OF THE REGULATION:

Identifying a network of regulatory knowledge, and providing an assessment of how this unfolded, requires a hop-scotch approach. This section will first briefly lay out the historical evolution of regulatory associations and practices in the United States and Europe. The purpose of this approach is to demonstrate how these two regions influence and inform regulatory knowledge ERRA uses to inform, in its own way, the regulatory practices in former Socialist countries.

This article seeks to situate the development of regulatory associations with the need for NRAs to acquire knowledge to assist their regulatory activities. The practical need to connect to other NRAs leads to the development of formal and informal networks where knowledge and activities are internationally coordinated. Fostering common regulatory knowledge, concerted action and common activity by NRAs, in a formal manner, is well documented among institutions within the European Union and labeled as European Regulatory Networks (ERN) [3], [5], [13]. Within this literature, further examination is given to informal aspects of energy ERNs through the examination of the formation of the EU's electricity and gas sector [1], [4]. Common regulatory practices and knowledge are propagated in 'formal structural' and 'informal networks' at the international and regional levels. Regulatory associations are embedded in this network and act as incubators for regulatory practices.

A. Regulatory history

The broad acceptance of professional management of the energy sector draws from the historical experience in the United States. In this section, the diffusion pathway of NRAs from the US to EU and non-EU countries is established and how independent institutions, buffering political interference, serve as an acceptable technocratic regulatory regime. The oversight role provided by energy regulators is fundamentally different from politicized ministerial oversight, which preceded the establishment of NRAs in Europe. This shift required education and the establishment of informal international networks where best practices can be shared and propagated.

The history of regulation in the US reflects broader economic, political and social processes in different time periods; these periods inform the study of regulatory diffusion and evolution of in America [14–19].

The launch of private electricity companies in the US in 1882 was followed six years later by the establishment of the professional energy regulatory association, NARUC. There are four historical periods in the US [12] (although a fifth of deregulation and competition during the 1990s can be added). The first phase beginning in the 1880s sought greater price comparisons where the "set rates roughly approximated those that would have existed under market conditions" [12]. This market regime gave way during the Great Depression to regulatory policies aimed at promoting industrial stability

through a quasi-corporatist strategy that "allowed regulators to draw on the expertise and resources of the regulated," thereby building an "associational regime" [12]. The following two phases focused on consumer and environmental protection and economic efficiency of the industry. Essential in all of these regime periods is the role of experts, "all involved attempts to enhance administrative agencies' scientific and social-scientific expertise" [12].

In Europe, the history of regulatory authorities is more recent. Most energy regulatory authorities were established in the late 1990s and early 2000s - in Western and Eastern Europe. The development of energy regulators largely preceded the formation of an organization that would professionally link each institution. For the European Commission, the promotion of an integrated approach to energy regulation could foster closer integration and commonality of regulatory practices.

Developing widely adopted best regulatory practices is the reason the European Commission fostered sectoral governance in energy through the Florence Forum for Electricity and the Madrid Forum for Gas, established in 1998 and 1999. "The Forum would develop ... legally non-binding, 'best-practice' rules and procedures for sector regulation, based on professional expertise and outside the political arena" [4]. The intent was to foster a common regulatory framework for competition and cross-border trade [4]. Later, after canvassing regulatory expertise from non-EU countries, like the US, two European organizations were established, serving as a foundation to European integration in sectoral expertise in energy governance. In 1999, the European Association of Transmission System Operators (ETSO) and in 2000 the Council of European Energy Regulators (CEER) were established [4]. The founding of CEER mirrors the US counterpart, of the National Association of Regulatory Utility Commissioners (NARUC) established in 1889. In 2003, the formalization of the role of energy regulation was cemented with the European Commission establishing, a strong arm of the Commission in the form of the European Regulators' Group for Electricity and Gas (ERGEG), which was composed of the heads of national energy regulatory authorities; with the purpose to coordinate development, in a consistent manner, the single European energy market. However, with the passage of the Third Energy Package, the Commission established the Agency for the Cooperation of Energy Regulators (ACER), which held greater authority. In 2011 ACER took over the responsibilities of ERGEG, which was then dissolved.

B. Diffusion methods of regulatory practices

National Regulatory Authorities provide the expertise to oversee system development and market operations with a large amount of private, as well as public, ownership in utilities. There are three different reasons that NRAs are established by governments. Each of these reasons is connected to professional management of the energy system providing a buffer between the political environment and private capital. The social aspect of regulation is central

because it is recognized the public good can be upheld by efficiently balancing the demands of investors and society. The growth of privately owned energy companies and market liberalization in the 1990s and 2000s in Europe corresponds with the birth of NRAs to provide this buffer [9].

There are three diffusion methods of NRAs, top-down, bottom-up and horizontal. The *top-down diffusion* method is demonstrated by the involvement of the European Commission (or other international institutions) instilling structural changes at the national level. Technical rule making is facilitated by the regulator, avoiding the politically charged legislative policy environment [1], [2], [4], [21]. The intent is to create a stable and predictable investment environment for private capital, where long term investment strategies can be realized.

For the European Commission, establishing a competitive and unified single energy market, is reliant on sectoral governance (*top-down*) that allows the skirting of national political debates while fostering technical rule making to build an integrated and common physically connected energy market [9], [21]. The movement from a positivist to a regulatory state [22] provides an opportunity to ensure the public good is provided through a professional system of administrators relying on specialized courts and 'independent' institutions rather than state owned, and politically influenced, administrators [22].

The *bottom-up diffusion* of NRAs is based in policy continuity. NRAs are established to attract external investment, as the sunk costs of the energy sector necessitates a predictable policy environment. Stability is one reason for NRAs to be created by a government. Shifts in the political environment may be another reason. If a governing political party wants to cement and protect the policy environment the creation of an NRA can provide long-term protection to the sector if a new political party is elected [9].

Horizontal diffusion of NRAs and installing them into the structure of the state stems from the need to legitimize policies. Emulation of NRAs indicates that "functional properties are less important than symbolic properties in driving diffusion processes" [9]. After NRAs become 'popular,' this 'taken for granted' practice links policies and organizations: countries attempt to legitimize policies and actions through the establishment of NRAs [9]. However, the establishment and *effective* functioning of regulators is dependent on *broader social and institutional settings* within a time period. This is important as in the new regulatory regime of governance – or regulatory capitalism, "power is entrenched nowadays in rules... [this a] major source of power" [21]. To legitimize policy, NRAs are established but success is dependent on fulfilling a broader mission than just operating with the holders of capital, regulators need to serve society.

The social value of energy regulators is demonstrated by their horizontal diffusion and focus on balancing social considerations with monopolistic market forces. The rise of the regulatory state [22] and the establishment of regulatory capitalism [21], [23], [24] necessitate the need to consider the

social benefits. The depoliticization of energy prices and instillation of NRAs represents the shift to a new regulatory regime.

C. The diffusion of a new regulatory regime

Regulatory capitalism, for Levi-Faur [21], holds distinctive characteristics separating it from previous regulatory eras: stronger autonomous agencies, new technologies of regulation, new national and international regulatory layers. The "hegemony of neoliberal ideology" is more discursive, as capital is constrained through a regulatory regime [21]. However, as will be shown this global regulatory regime is cemented within local institutional and social relations where the elements of multi-actor institutional 'governance' mute and mitigate alien practices.

The diffusion process of NRAs, within regulatory capitalism becomes important to examine, as "any understanding of systemic change is deficient" [21]. The corresponding privatization of electricity and telecoms companies with the establishment of new regulators [21] demonstrates the empirical linking to a new regulatory regime.

The gap in the literature is exposed at this point. Studies on the diffusion of NRAs examine the quantitative spreading of laws, rules and norms. However, they fail to contextualize formal and informal networks within the regulatory associations that identify and produce the 'best practice guidelines' that NRAs strive for. The linkage that this article provides between the theoretical and empirical will expose the importance of both formal regulatory institutions, an association (ERRA) and how individuals interact within the informal spaces of educational courses, conferences, and working groups; thereby spreading regulatory knowledge.

D. Transnational Networks

The rise of the regulatory state, is also tied to the development of transnational regulatory networks which diffuse knowledge and best practices [1], [2]. The focus to date has been on the networks in the EU [1], [2], however as will be shown, there are linkages between professional regulatory practitioners in the US, EU and non-EU countries. These networks act to harmonize regulatory activities, "Transnational regulatory networks are composed of experts and representatives of national regulatory bodies, who come to agreement among themselves," with the participation of other actors [1]. The networks are boosted by the development of common 'best practices,' thereby encouraging and shaping the broader development of the regulatory sector towards a specific regulatory regime.

Fostering the coordination and cooperation of regulators and sharing experiences, from different countries or regions, requires a level of trust. Disclosing the background to regulations (political or otherwise), whether formal or informal, requires "a high degree of trust and a willingness to co-operate It is only then that information can be disclosed and exchanged" [1] thereby producing 'best practices.' Trust also extends to the relationship between regulator and regulated. In business-government relations, it is shown that a

business holding an 'insider' status by providing consistent and credible information facilitates regulatory making. Here, "reputation and goodwill become key components," in the regulatory arena [6].

Formal and informal trust, whether through CEER/ACER or in working groups with industry and regulator personnel is characteristic of the diffusion network and the movement from *government* oversight of the energy sector to *governance* in the energy sector.

E. Governance networks

The transformation to governance is so striking that Levi Faur describes the rise of a multi-level, multi-spatial European regulatory space composed of institutions, actors, instruments with different modes of implementation. Governance becomes encompassing of "standing committees, committees of wise men, working groups, programs..." [11] infused into a new European architecture of energy governance [10]. Emphasis is placed on the interconnected nature that governance provides. Governance is defined to include modes of "coordinating individual action, such as hierarchies, networks, associations, or markets," and extends beyond hierarchical structures [7]. This is important if informal associations and organizations are considered to be part of the governance process involved in international NRA activities.

Efficient governance capacity, integrated into these networks, is important when the provision of public goods is challenged on technical, economic or political grounds. It will be shown in the case study, sufficient governance capacity and education is important for structural adjustments. Regulatory adjustments are dependent on connections to other state institutions [7].

Governance in a new European regulatory space that is multi-spatial and scalar also requires structurally 'independent' NRAs to be reliant on a broader state structure, this requires cooperation with institutions with overlapping competencies and inter-dependent authority [1]. This interaction shapes and re-enforcing a regulatory regime. However, strong competencies must exist within regulatory institutions to satisfy and shape the inter-institutional outcome of policy development. "Governance mechanisms provide opportunities for information sharing mutual learning processes and performance enhancing benchmarking processes that are crucial for developing sound policies" [4]. Effective governance networks provide the opportunity to produce effective policies within the broader - and older, framework of state government.

III. METHODOLOGY

Developing a method to draw out the relations within an international regulatory network is effectively addressed through a qualitative approach. By using access granted by ERRA, 31 interviews were conducted with current and past ERRA members, regulatory staff and individuals closely associated and knowledgeable about ERRA's formation and its activities. A triangulated approach to data collection and verification was implemented. This rested on interviews,

document analysis and theory. The theoretical perspective, as discussed above, identified how and why it is expected that regulatory authorities and the individuals within them would interact and how knowledge could spread. The other two points of the triangle are addressed through semi-structured interviews and analysis of documents produced in relation to ERRA between 1997 and 2011. Discussed here is how a triangulated methodology provides an in-depth study of the spread of regulatory practices through formal and informal channels.

"Multiple triangulation exists when researchers combine in one investigation multiple observers, theoretical perspectives, sources of data, and methodologies" [25]. Data collection is done through a range of methods. These include in-person interviews, telephone interviews, email questions and textual analysis of contributors to a publication. A range of interviewees were sought, seventeen of these were either current or former leaders of their respective regulatory institutions. Seven regulatory staff were questioned, as well as external supporters of ERRA: three from international organizations, three experts and consultants and one from an energy company.

The selection of interviews was done by both the researcher and the ERRA secretariat (see limitations below). The selection of participants was based on geographic spread and the level of participation, and history in ERRA. A general mix of participants was sought with founding members and new members both approached. The interviews were conducted between December 2011 and March 2012.

It is important to remember that there is a balance in an interview program between depth and breadth [26]. "In-depth information from a small number of people can be very valuable, especially if the cases are information-rich" [26]. However, the criterion for stopping in such a study is when interviewing produces a 'saturation' level, i.e. key people begin to be repeated again and again by interviewees [26]. Repetition and a common understanding of the formation and purpose of ERRA is echoed among the interviewee comments.

Data from the interviews was extracted by transcribing and coding. During the transcription process, a dual process of searching for pre-selected themes and emerging themes was carried out. These 'thematic units' [27], which can also be applied and drawn from other data sources, were noted in the margins of the texts and a list of themes built up. Three categories of pre-selected themes emerged from the theoretical text related to the diffusion of regulatory authorities, knowledge and practices. 1) Structural: institutional arrangements, growth of private utilities and market liberalization. 2) Normative practices: knowledge exchange, building trust and exchanging experience to create best practices. 3) Diffusion: Top-down, bottom-up or horizontal diffusion of knowledge and institutions through the transnational regulatory networks.

The overall research stems from a project that the researcher was paid to produce for ERRA. This does highlight both a conflict of interest and limitation of this study. The original publication focused on documenting ERRAs growth

for its 10 year anniversary. Acting as a consultant at the time, this researcher, took a methodological approach to data collection that mirrors the same approach as a research study. The selection of interviewees was done by both the researcher and ERRA secretariat. However, this can be justified as the secretariat acted as a gatekeeper to the wider organization and the willingness of interviews to participate in the project. (The fact that 17 current or former heads of regulatory authorities were interviewed, would be difficult to repeat without the support of ERRA). It is possible that dissenting or disgruntled individuals were excluded from the interview process. However the focus in this article is on the diffusion of knowledge and practice rather than the success of the organization, such viewpoints would have limited impact to the overall results.

IV. HISTORY OF ERRA

The historical beginning of the Energy Regulators Regional Association (ERRA) does not stem from an explicit strategy to develop the regulatory institutions in Eastern European and CIS countries. Rather, the history of ERRA's formation is wrapped up in broader structural changes of the time and personal connections. The Post-Soviet era created a dramatically altered economic and social environment that necessitated a political response. Part of this response was the establishment of professional regulatory agencies that would oversee the newly privatized and 'state reformed' energy sector. In either case, NRAs were seen as key to the modernization of the sector and the national economies while balancing significant social demands.

The initial wave of new energy NRAs in the mid-1990s, corresponded with an awareness that these new institutions were lacking the institutional and regulatory knowledge necessary to fulfil their missions. There was, among key individuals, a common awareness of the lack of regulatory expertise to oversee the entrance of private investments and provide oversight.

The United States Energy Association (USEA), an energy industry trade group, worked with USAID to provide assistance to governments and industry in Eastern Europe. In November 1997, a regulatory conference was hosted by the newly founded Hungarian Energy Office. USAID and USEA helped coordinate the conference. The 15 countries in attendance were guided in their discussion by the core principles of regulators: independence, transparency and public participation, and the need for stable and consistent regulation to attract and foster investment.

The foundation for ERRA was laid. At the 1997 conference, participants exchanged their regulatory experiences. They also established, what would later become ERRA's two ad hoc committees: the Tariff/Pricing Committee and the Licensing Committee (later expanded to include competition). These became formal ERRA standing committees in 2001.

After the conference, one of the attending American regulators worked with NARUC to apply for a USAID grant. In 1999, USAID signed a cooperative agreement with

NARUC to develop its international program. The replacement of USEA with the regulatory knowledge of NARUC marks an important point in the flow of knowledge from the US to the former Socialist countries.

The organizational model of ERRA is based on NARUC's open participatory structure, reflecting the fact that each American state has different laws and procedures for their regulatory commissions. Echoing this diversity, ERRA members also come from different legislative and regulatory backgrounds, including different organizational structures for utility commissions. The lack of a common regulatory framework or authority requires ERRA to be responsive to this diversity. Reflecting the linguistic diversity, ERRA operates in both English and Russian.

ERRA is guided by its constitution. The creation of a constitution was a challenge, with not just procedural items preventing agreement, but also linguistic and cultural issues arising - reflecting the geographic diversity. An important item was the decision that ERRA would not have binding policies [28]. All interviewees echoed the decision for voluntary adoption of regulatory practices [e.g. 28–31]. The reason for a voluntary approach, also stems from the recent history. "After the fall of the Socialist regime, where there was obligatory cooperation, now was a chance to participate voluntarily," stated ERRA's first chairman [32]. On December 11, 2000, 15 members signed ERRA's new Constitution and the Secretariat began operation in 2001. In 2012 it now has 24 full members and nine affiliated and associated members.

A. Structural pressures

The broader economic and political pressures served as a driver to create an organization to exchange regulatory knowledge. The impetus for cooperation between regulators, from both the US and Europe, stemmed from the grounded need to learn and apply regulatory principles. The adopted peer model was based on the common experience and challenges faced by regulators. Remarking on the time period, Gábor Szoronyi, previous ERRA chairman and director of the Hungarian Energy Office stated, "Every country was facing restructuring of its energy industry and most were planning for the introduction of competition. The new regulators realized there was no common regulatory manual or rulebook from which to learn. It became evident that we needed to learn from NARUC and from each other" [31] This cooperative learning represents the approach ERRA applies. Thus knowledge not only flowed from the US regulators but between ERRA member regulators as they faced the structural changes their economies were facing in the energy sector.

However, while ERRA members faced common economic and political transformation towards a market based economy, the regulatory environment that develops is dependent on the local social and institutional environment. Sergey Novikov, the head of the Russian Federal Service for Tariffs (FTS) considers both the global and local political and economic environment important for the shaping of a stable regulatory environment. "Socioeconomic and sociopolitical factors also influence creation of a stable regulatory environment,"

however, he further states, "there are no common, and similar, fully fledged system of regulation, which can easily be copied and pasted from one part of the world to another" [33]. While parts of the regulatory system resemble each other, they must be adjusted to fit different national context. Overall, Novikov states, there is a general movement in the same regulatory direction, and for him, Russia has moved in this direction in the last 6 to 7 years [33].

When social and political environments became more open to regulatory practices, even if limited, international best practices can be adopted by parliaments. Usually, the confluence of structural changes, such as privatizations, with local socio-political factors allow regulatory practices to be transferred voluntarily, thereby drawing on ERRA's best practices and benchmarking studies, network of regulators and training sessions for regulators and staff.

B. How best practices are identified and transmitted

The terms 'best practices' and 'regulatory knowledge' represent the collective action of regulators, staff and consultants examining specific methods used to regulate the activities of energy companies. ERRA has prescribed ways that knowledge is developed and distributed.

The evolution of ERRA and how it has changed as an organization from seeking to understand basic regulatory principles to tackling emerging topics, like smart metering, can be seen in the output from working groups. For example, the licensing and competition committee evolved over time from just comparing regulatory practices in different countries and regions to looking at demand side management, which considers how the demand for energy can be reduced through the regulatory environment.

The output of committees and workshops are demonstrated through the documentation produced. However, underlining the development of these studies is the interaction between regulators and their staff. The international network, that is represented in ERRA membership also reflects the interaction of individuals within these organizations. And it is here, through informal discussions, workshop participation that trust is established between individuals, which feeds into the flow of knowledge that defines both the formal and informal learning.

C. Formal education

Central to the mission of ERRA is educating regulators and their staff. There are specialized training courses every year. These range from an introductory course to specialized courses on market monitoring and pricing. From the student perspective, the trainings offer the opportunity to learn about common and best practices in energy regulation. Interviewed students identified the ability to apply their education in their jobs; basing their recommendations on the material and instruction received on the courses [38], [39]. Education in ERRA is an active process, with learning, reviewing and applying the knowledge key steps. The process becomes circular as educated staff members participate in committees to identify further best practices (discussed below).

Providing a well founded educated decision is essential as

decisions can be appealed and challenged in court. In addition, there may be strong interest and pressure from governments and investors. Therefore, having international comparisons of similar cases and methodologies can improve how a final decision is viewed by interested parties.

The independence of the regulator may be weakened if there are mistakes in the decision making process. Interviewees reflected the statement, such as by the director of the Regional Center for Energy Policy Research (REKK), the head of ERRA's partner organization that organizes the education programs, knowing "what they do is in line with international practice, gives self confidence" [32]. If they do make mistakes and don't know how to do it right, this can increase vulnerability for the regulator to maintain or increase its independence from other state institutions. Therefore, having the training and an informal network of colleagues, both developed during the trainings, provides an important support mechanism to the internal decision making process [32].

ERRA's members engage in technical discussions in committees and working groups; producing, for a member of the legal working group, a type of "soft law" such as best practice guidelines" [40]. These exchanges result in meaningful suggestions for altering regulatory practices, impacting national and regional energy markets. The joint exploration of regulatory issues educates and produces identified best practices.

Experts participating in the groups are already highly advanced in the issue area; putting these minds to work on a joint issue can exceed what national regulators can do alone [41]. "Working groups and committees leverage resources. Working groups and committees can access broader, deeper data, retain international experts, and rely on other resources that would be difficult, if not impossible, for individual, and smaller, regulatory bodies to access," stated an international utility lawyer who was active in ERRA [41]. The cooperation of regulators produces an international body of comparative studies, enabling regulators to develop national regulatory practices.

The variations in legal systems and the different energy sources, market structures and operational models in member countries does not detract from the comparative work. According to a Serbian regulatory lawyer, "the problems that a regulatory authority faces in the Far East or in South East Europe are surprisingly common" [40]. Diversity may lead to better identification of regulatory practices. Producing 'soft law' and swapping of regulatory norms and experiences is heavily reliant on informal exchange of information and the development of trust between participants.

D. Informal education

The formal educational and organizational structure of ERRA provides the framework for the informal exchange of experience and learning. It is through interaction in and outside conference rooms that trust is developed between regulators and staff. According to an Serbian regulatory lawyer, "The exchange of experience and not via binding

decisions and a heavy institutional framework is the whole idea behind the working groups and committees” [40]. Closer contacts with other regulators, was cited by the Chairman of the Russian regulatory authority, as fostering closer links through informal communication enabling a perspective to be developed of the main areas of change in regulation [33]; informal communication becomes nuanced communication to identify and understand new international pressures or practices.

ERRA extends this concept of informal communication by inviting the energy industry in once a year at its Energy Investment and Regulation Conference. Here, "there was an air of openness," as bankers and utility company representatives could give direct feedback to national regulators. Investors can honestly express their views on the conditions in a country - and whether they would or would not invest [30]. The informal communication further feeds into how regulators balance the evolving national and international regulatory and investment environment.

Institutionally, communication of best practices extends to the joint membership ERRA member regulators, who are in the EU, hold in both ERRA and CEER. In 2004, seven ERRA members joined the EU and in turn the EU's regulatory association, CEER. This dual membership has resulted in further transferring of knowledge. One member of both organizations points to the ability to work with EU accession countries and other third countries in aligning their legislation with those of the EU. This is important, for this respondent, due to the growing interconnection of the market [42].

The lack of any 'textbook' that would teach the new regulators in formerly Socialist countries how to deal with the new capitalism resulted in collective action. The new ERRA member regulators partook in a common exchange of experiences and learned from US regulators. Since the beginning, the organization has sought flexibility and avoided imposing a common regulatory solution. The transfer of knowledge and the development of best practices provides a foundation for regulatory practices to be adopted and implemented in diverse institutional and political settings. The substantial support and involvement by US regulators through NARUC and USAID contributed to ERRA's strong beginning. Both formal and informal learning support the international network necessary for regulators to align local practices to international standards. Integrating ERRA's network of emerging economies, into the more developed EU's CEER network, further propels the spread of regulatory knowledge and best practices. ERRA's evolution to a regulatory knowledge base, with collected practices from the US, EU and other regions, demonstrates how international networks diffuse common practices.

V. CONCLUSION

The diffusion of regulatory practices to ERRA member countries can be seen to emanate from structural and normative influences. Exchanging experiences reinforces a particular form of knowledge that strives to produce an international benchmark of experiences (best practices).

Different associations based on political and historical boundaries (US, EU and former Socialist countries) emerge to shape the spread and implementation of regulatory practices; including the sharing of these between organizations. ERRA reflects the response to structural changes by reacting and developing learning through formal and informal avenues.

The purpose of this article is to contextualize and document the change to a system of governance that incorporates international regulatory networks into the institutional landscape of the state. This is done in three ways:

First, the emergence of regulatory capitalism can be seen as a continuation of past eras of professional management in the energy sector. For Levi-Faur [23], there is a great need to explore systemic change to understand how transition occurs. Regulators are part of the state structure and must exist and survive within the broader political-socio-economic environment. Independence can only be exercised within the formal and informal boundaries of a countries political system.

Second, operating within the domestic arena, at a high professional level, requires an understanding of what are common regulatory practices in other countries or regions. Knowledge gained about rules, regulations and even accounting methodologies impacts utilities in two ways: (1) rate payers are paying a fair price for the services provided; (2) utilities are receiving a fair rate of return and have a predictable investment environment. The required specialized knowledge is difficult to be developed independently. Best practices developed by ERRA are based on its members' common history and current needs, thereby differentiating it from practices in NARUC or CEER regulators. By taking on a peer learning approach, experiences are shared, both formally and informally. Further connections are made by exploring issues with NARUC or CEER members. This facilitates the further spread of regulatory practices.

Third, the diffusion of regulatory institutions, bottom-up, top-down and horizontal occur for various reasons. From attracting and retaining investors, protecting economic arrangements from political winds, requirements or encouragement by international institutions and the need to legitimize the 'independence' of oversight in a country's energy sector.

Regulatory networks are the reality in a multi-spatial and multi-scalar international regulatory environment. With global capital flows, requiring a professionally managed energy sector, attracting and retaining investment is reliant on a well functioning energy regulator. To achieve social benefits within new regulatory capitalism international benchmarking and identified best practices are necessary to guide regulators within their domestic institutional settings. ERRA demonstrates how knowledge and identified practices diffused from the US; while ERRA's members overlap with CEER enabling new and common EU regulatory practices to diffuse further to non-EU countries. The international network of regulators transfuses and transforms regulatory knowledge within the new global form of regulatory capitalism.

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