Global Energy Governance Needs to Be Multi-level and Regionalized

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The exclusive focus on universal-level global energy governance is problematic. Even in the European Union, emphasis is placed on multi-level governance in the energy policy issue-area. Yet although the EU has been near the forefront of advocacy for global energy governance, it has failed to consider systematically, or at all, the advantages of multi-level governance from the global through the regional to the national levels, as well as the cross-cutting transnational and transgovernmental levels. The contrast between the failure of regional European-Ukrainian-Russian energy cooperation on the one hand and, on the other, the success of regional Azerbaijani-Georgian-Turkish energy cooperation drives the point home. Incentive structures of practitioners and academics, conditioned by the sociology of knowledge, inhibit common dialogue over energy governance. Academic-policy boundary organizations represent only a special case of knowledge transfer processes. If overarching global policy goals are to be achieved, then idiosyncratic regional contexts cannot be ignored in global energy governance. They must be respected and allowed their relative autonomy.

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The present article draws a contrast between the failure of negotiations among the EU, Ukraine, and Russia over the reconstruction of the Ukrainian gas transportation system (GTS) even before the annexation of Crimea, and Azerbaijan's successful experience of energy development, exporting energy not only to Georgia and Turkey but also to Russia and other countries. The Baku-Tbilisi-Ceyhan project demonstrated the strategic value of having of multiple export pipelines, offering flexibility to producers and consumers alike. Interestingly, this project was constructed without direct reference to Energy Charter Treaty norms. A review of these two cases sets the stage for conclusions about global energy governance.

In particular, this comparison of the two cases underlines the failure of current designs for global energy governance to account for regional geo-economic realities. From this is can be concluded that global energy governance must be multi-level if it is to have any chance of succeeding. This means that it must also be regionalized from a global level downwards. The successes and failures of energy governance in the South Caucasus and its neighborhoods strongly suggest that universal-membership organizations are unable to solve local problems. Account must be taken of local and regional geo-economics and geopolitics if global energy governance is not to suffer failure due to its refusal to recognize realities. A few ideas in this direction are also suggested.

Introduction

Discussions of energy security have tended to focus on security of supply, giving rise to a criticism that this is treated as a zero-sum game. Such critiques typically seek to draw attention to the institutions of the market and the 'rules of the game' that structure them.[1] The strategy in this regard is that policy elites may then 'adjust' those norms in order to promote the particular type of public behavior they wish to see. Thus 'energy governance' has become a cottage industry among academic researchers,

1 Goldthau, A. and Witte J.M. (2009) 'Back to the future or forward to the past? Strengthening markets and rules for effective global energy governance'. *International Affairs*, 85(2), pp. 373–90; Goldthau, A. and Witte, J.M. (2010) 'The Role of Rules and Institutions in Global Energy: An Introduction', in Goldthau, A. and Witte, J.M. (eds.) *Global Energy Governance: The New Rules of the Game*. Washington, D.C.: Brookings Institution Press, pp. 1–21.

policy analysts and decision-makers concerned with the global level. Such a focus is perhaps best illustrated by the widespread concern with establishing limitations upon carbon emissions. In this respect, great hope has been accorded to the United Nations Climate Change Conference (Paris, December 2015) on a universal and legally binding agreement on greenhouse gas emissions.

The real situation is more complex. For example, Chester points out two fundamentally different definitions of energy security, one framed in market-centric terms of price and supply while the other includes such issues as affordability, availability, capacity, and sustainability. The first views energy security as the outcome of a self-equilibrating, competitive, and self-regulating market. The second sees energy security as a market outcome resulting instead from institutional arrangements and processes orchestrated by the actions and policies of the state.[2] The dichotomy may also be interpreted through the division between the realist and neoliberal approaches in Western theories of international relations.

Johansson's approach complements that view by pointing out that the traditional categories of security of supply and security of demand are in fact subcategories of the 'energy system as an object exposed to security threats' that fail to take into account the 'energy system as a subject generating or enhancing security'. The latter includes economic and political risk factors, technological risk factors, and environmental risk factors.[3] Here the salient point is that the expansion of the concept of energy security beyond the economic zero-sum brings under consideration many risk elements that depend upon local conditions and are therefore not amenable to treatment under global frameworks. Moreover, the main characteristics of an energy system as a security-enhancer are risk factors, and although risks may also be regarded as opportunities, they often predispose the players to a zero-sum approach. Chester's two different definitions of energy security broadly

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2 Chester, L. (2010) 'Conceptualising energy security and making explicit its polysemic nature'. *Energy Policy*, 38(2), pp. 887–895. See also Omonbude, E.J. (2007) 'The transit oil and gas pipeline and the role of bargaining: A non-technical discussion'. *Energy Policy*, 35(12), pp. 6188–94.

3 Johansson, B. (2013) 'A broadened typology on energy and security'. *Energy* 53(1), pp. 199–205.

correlate with Johansson's two super-categories.

European policy-makers have been at the forefront of global energy governance, and the concept of 'European energy governance' has been part of their vocabulary for some years. 'Multi-level governance' is an approach to European integration studies introduced into the scientific literature two decades ago.[4] It is therefore odd that the idea of multi-level governance has not been coupled with the concept of global energy governance, even by the Europeans, although the practice of EU energy policy implicitly (and sometimes explicitly) incorporates multi-level approaches.[5]

The Energy Charter Treaty and the Failure of European-Ukrainian-Russian Regional Energy Cooperation

A glance at the successes and failures of the Energy Charter Treaty (ECT) sheds light on prospects for the evolution of global governance in the energy sector. The ECT represented the institutionalization of the European Energy Charter signed in The Hague on 17 December 1991. The Energy Charter Secretariat evolved from this declaration, and was institutionalized by the legally binding ECT subsequently signed in Lisbon in December 1994, which entered into force in April 1998. The ECT's main organ is the Energy Charter Conference (ECC), in which state-signatories participate, and which has as its subsidiary bodies three groups, one working group, and two committees. Its failure at the end of the last decade to negotiate and adopt a Protocol on Transit has stymied its further development, although it has continued to propagate its principles and draw third parties into Observer status, particularly from North Africa and Asia. There are also a few Observers from South America.

The Energy Charter's original purposes were to diminish Europe's dependence on OPEC and encourage post-Soviet reform by promoting free trade and ensuring access to resources.

4 Hooghe, Liesbet (ed.) (1996) *Cohesion policy and European integration: Building multi-level governance*. Oxford: Clarendon Press; Hooghe, L., and Marks, G. (2001) *Multi-level governance and European integration*. Lanham, Md.: Rowman & Littlefield; for a review of the field as of the end of the last decade, see Piattoni, S. (2009) 'Multi-level governance: A historical and conceptual analysis'. *European Integration*, 31(2), pp. 163–180.

5 For a recent implicit counterexample, see Hoppe, R., and Wesselink, A. (2014) 'Comparing the role of boundary organizations in the governance of climate change in three EU member states'. *Environmental Science and Policy*, 44(1), pp. 73–85.

Its principles were subsequently codified in the Energy Charter Treaty (ECT) with its Secretariat in Brussels, now an institution autonomous of the EU, and periodic meetings of the ECC. The ECT was signed by essentially the entire membership of 'OSCE Europe' and ratified by all but a handful of these countries. Italy, notably, served notice in 2015 of its intention to withdraw from the ECT in 2016. The United States signed ECT but did not ratify it.

Russia signed the ECT under the Yeltsin regime but was unable to ratify it and later renounced its attempt to do so. In the mid-1990s, the ECT was sent to a committee of the Russian Duma where the majority of members represented the interests of certain industrial bureaucracies, and ratification foundered. President Yeltsin tried and failed to implement it by decree. The failure of the South Stream pipeline project is the logical consequence of Russia's failure to accede to and implement the ECT, as this pipeline project fell afoul of the EU's Third Energy Package, which may be considered as implementing certain ECT norms in Europe.

Europe had suffered energy shortages during the January 2006 Russian-Ukrainian gas crisis caused by Moscow's harsh and very public decision to cut off supplies. The G-8 summit in St. Petersburg held in July 2006 had questions of energy cooperation as an explicit focus. In the run-up, Russian President Vladimir Putin flatly and explicitly rejected the ECT's attempts to open Russia's domestic energy market to competition, broaden access to its energy transit infrastructure, and assure nondiscriminatory treatment for non-Russian firms.

Ukraine signed an accession protocol to the EU-sponsored Energy Community (distinct from the ECT) in September 2010, which entered into force in February 2011. Ukraine's accession to the Energy Community required it to implement the EU's Third Energy Package, including 'unbundling'. This meant, among other things, that *Naftohaz Ukrainy* would cease to exist as it had, and gas import contracts with Russia would be renegotiated within the new economic and legal environment.

The unbundling of *Naftohaz Ukrainy* changed the calculations of transit economics for Gazprom and Russia. Gazprom would

have to compete with alternative sources of energy that Ukraine was developing, which enabled it to seek to change the pricing formula. As a result, even before the Russian annexation of Crimea, Gazprom was seeking to diminish or eliminate its dependence upon the Ukrainian market and also upon Ukraine as a transit country to the EU.

In fact, Ukraine first moved towards unbundling its supply and transit contracts with Gazprom as early as the spring of 2004, before the Orange Revolution. Ukraine's objective was to justify increasing transit fees for Russian gas to Europe. The unexpected result was higher prices for gas from Russia. The EU and Ukraine opened negotiations over energy issues in 2008, but Ukraine moved decisively to cooperate with the EU over energy policy only following the second of the two Russian gas cut-offs, the first lasting three days in January 2006 and the second lasting 19 days in January 2009.

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The opening of the Nord Stream gas pipeline in 2011, under the Baltic Sea from Russia directly to Germany and Europe, threatened Ukraine's place as a transit country and the economic value of its GTS. However, Nord Stream's capacity utilization has fallen significantly. Even with the second route now open, potentially enabling transit of 55 billion cubic meters per year (bcm/y), the throughput for 2014 was only slightly more than half that quantity, at 29 bcm. Gazprom's moves towards the now-failed South Stream pipeline and its 'Turkish Stream' successor (with a supposed projected capacity of 63 bcm/y) represent the same threats against Ukraine as did Nord Stream.

After 1991, Gazprom became the proprietor of the GTS in several Soviet successor states by taking ownership in exchange for cancelling debts accrued as a result of gas imports. This possibility was discussed with Ukraine in the middle of the last decade, but in 2007, the Ukrainian Rada passed a law written personally by then-prime minister Yuliya Tymoshenko. That law set out several different ways in which Ukraine's GTS could be alienated from state property and forbade them all in detail. The law acquired the force of a constitutional provision. An agreement signed with the EU in March 2009 in Brussels underlined that Ukraine's GTS (including more than 60,000 kilometers of pipe

plus 71 compressed air plants and 13 underground gas storage facilities) was and would remain the property of the Ukrainian state.

From Moscow's standpoint, the problem was that even though the gas to Europe transits Ukraine, Russia as supplier is responsible for its delivery to the EU. Even in 2006 and 2009, EU customers raised no claims against Russia; nevertheless, Russia perceived a transit risk from Ukraine. The non-transparency of Ukraine's GTS and its inefficiency made it difficult and sometimes impossible to trace the status of any discrepancy between the amount of gas that Russia said it sent, and the amount that Europe said it received. Ukraine's four goals in talks with Russia had been to renegotiate prices to a lower level, to reconsider the June 2009 gas bilateral delivery contract, to ensure the 'stability and predictability' of gas supply especially via Ukraine to Europe, and to consider options for modernizing the GTS.

In 2010 the Russian ambassador to the EU, Vladimir Chizhov, said that his country welcomed proposals by Kiev for a 'three-sided' plan to modernize Ukraine's GTS, with Moscow's involvement. At the time, Ukraine's Prime Minister Mykola Azarov announced that his government would look for a trilateral approach that would include Russia, a point that he repeated in September 2012. However, the EU showed itself unwilling to discuss anything other than Ukraine's compliance with the administrative norms of the Energy Community.

Despite early estimates that modernization of Ukraine's GTS could cost at least $15 to $20 billion, a group of German engineers who visited the country in 2012 looked at the question in specific detail arrived at the more modest price-tag of $5.3 billion. A pilot demonstration project costing one percent of that amount was successfully implemented in 2013. In early 2013 the EU finally said it was interested in a trilateral solution, but that a bilateral Ukraine-Russia solution was also possible. The IMF, the World Bank, and the EBRD allocated US$1.7 billion for industrial modernization projects, such as the replacement of old compressor stations responsible for significant leakages. However, these loans were not authorized.

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Ukraine's future depends on all this geopolitical and geo-economic jockeying. Russia wanted Ukraine to join its Eurasian Customs Union (ECU), an entity that already included Belarus and Kazakhstan. Yet Ukraine's legal obligations under the ECT (and also under the Association Agreement with the EU) precluded the possibility of both joining the ECU and deepening European cooperation with the EU. Every attempt at international and regional energy governance failed in the EU-Russia-Ukraine energy triangle because of the underlying geo-economic and geopolitical stakes and conflicts. Overarching normative frameworks could not be implemented in a way that resolved underlying geo-economic conflicts.

Regional Focus and the Success of Azerbaijani-Georgian-Turkish Energy Cooperation

In contrast to the failure of EU-Russia-Ukraine cooperation on energy security stands the success of Azerbaijan-Georgia-Turkey cooperation. The negotiation and successful implementation of the Baku-Tbilisi-Ceyhan (BTC) oil export pipeline is correctly said to be the foundation of this trilateral cooperation, which has since expanded into other realms of economic and political activity. Although the BTC pipeline is now taken for granted, the odds were in fact strongly against it. The early and mid-1990s saw the hot wars in the North and South Caucasus, the absence of state structures and capacities in Azerbaijan and Georgia, and the price of oil well under $20 per barrel.

The BTC pipeline was, furthermore, the first oil pipeline in the history of the industry to be built through three countries: a producing country, a transit country, and an export country. As a result, the parties to the negotiations, including the international oil companies and their consortia as well as the international financial institutions (IFIs), had to engage in a great deal of organizational innovation and institutional learning. Even legal regimes to govern the transit of oil through such pipelines did not exist.

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Three lessons from energy development strategies in the Caspian basin during the 1990s enabled the partners to overcome these obstacles. The first was about the need to coordinate production

and pipeline development, also taking account of the fact that financiers are not concerned with the problem, such that it is necessary to involve shippers as partners. The second lesson was that if a pipeline goes through two or more countries, it is helpful to split up financing by splitting the project itself into segments, each of which is justifiable on its own merits.

The third lesson was that the multiplicity of different consortium members significantly complicates their ability to act upon a financing strategy, especially where strategies differ from one field to another. For example, in large mature fields that remain essential to a host country's economy and where there is an established skill base, the strategy should be to address fixed costs and to optimize the infrastructure. By contrast, in immature, partially developed fields and satellite fields, it is still necessary to establish a good legal framework and reasonable tax law.[6]

It was necessary to negotiate in parallel, for simultaneous signature, no fewer than four agreements: a cost guarantee agreement, about the responsibilities of governments; an agreement between investors and the transit states; the agreement on the export pipeline itself, with multiple parties including the governments, the investors, and the pipeline's management and operating authority simultaneously to be created; and the construction contract itself, agreed among the three parties plus the contractors. Yet even these agreements did not guarantee that the BTC pipeline would be built, first because BP's support for it did not guarantee financing, and second because the necessary volumes had not yet been identified or committed.

Georgia was brought into the BTC negotiations at a relatively late stage. As a result, Tbilisi found it necessary to raise a series of questions to ensure that its own interests would be taken into account. There were three questions: one about tariff levels for the right of transit, one about financial responsibility in case of *force majeure* (and the related question of responsibility in case of cost overruns), and one about obtaining right-of-way overland for pipeline construction (and related question of reimbursement to property owners).

6 For background, see Cutler, R.M. (1999) 'Cooperative energy security in the Caspian region: A new paradigm for sustainable development?'. *Global Governance*, 5(2), pp. 251–271.

These questions were complicated by the political geography of Georgia. It was originally conceived that the pipeline would traverse the ethnic Armenian region of Javakhetia, which at the time hosted Russian military bases inherited from the Soviet era. The alternative was the effectively autonomous region of Ajaria, then ruled as a fiefdom by Aslan Abashidze. In the end, the pipeline was routed through Ajaria, increasing the overall construction cost by four percent.

Georgian issues prevented the formal signature of the four agreements at the November 1999 summit of the OSCE in Istanbul, as had been planned, but it was at least possible to initial them. After this, BP's position on BTC changed. The company committed not only to contributing to the oil volumes for the pipeline, but also to investing in the engineering and design of the entire line and to organizing shippers and financing for the project on the basis of equal access by all producers.

The agreements thus acquired the status of international treaties, guaranteeing a stable business environment and giving uncertain investors the confidence that they needed in order to proceed.

After the agreements were subsequently formally signed, the national parliaments of Azerbaijan, Georgia, and Turkey all ratified them and incorporated their provisions into domestic legislation. The agreements thus acquired the status of international treaties, guaranteeing a stable business environment and giving uncertain investors the confidence that they needed in order to proceed.

Aside from political protests by Russia and Iran, the only obstruction to building the BTC came from the consortium developing the offshore Azeri-Chirag-Guneshli deposit, the Azerbaijan International Operating Company (AIOC). Sometimes it seemed that AIOC was searching more for obstacles to the pipeline's construction than for ways to overcome them. A principal organizational problem was that there was no executive body acting exclusively on behalf of the AIOC's own interests, as a consortium, within the framework of Caspian energy development.

As a result, AIOC's capacity to respond to changes in its business and political environment was limited by the evaluation of those changes by its participating members, each on the basis of its own interests. The construction of the BTC pipeline was complicated by the AIOC's declaration that it would not participate in the

financing, because it was exclusively an oil exploration and production outfit. Rather, the consortium's members would decide, each for itself, whether and to what extent to participate in the financing.

Since Turkey had agreed to cover possible overruns on the Turkish segment, but the matter of how to cover overruns on the Georgian segment was still under dispute, one practical effect of that declaration was to leave the source of any putative reimbursement of landowners in Georgia (selling their right-of-way) unresolved. Perhaps AIOC became so accustomed to being an agenda-maker that was blind to the possibility that its inaction could make it an agenda-taker.

The consortium's members went through a learning process as they defined issues of common interest and acted jointly with reference to them.[7] Nevertheless, issues in the business and political environment that touched AIOC on a strategic level affected its participating members only indirectly. Consequently, the AIOC was often slow and weak in formulating a strategic response to changing conditions, unable to overcome the particular interests of its members who had other assets and interests throughout the Caspian region.

Despite all the talk about the need for BTC to be commercially justifiable, the AIOC was a latecomer to the task of improving the business environment of the consortium itself. Therefore BP, as the strongest and most prominent component company, not to mention the operator, eventually took the lead in defining the incentive structure of the consortium as a whole. It is worth noting that oil from both Kazakhstan and Turkmenistan have for several years been making up a significant proportion of BTC's throughput, as was envisaged fifteen years ago, when the Shah-Deniz deposit unexpectedly turned up gas and condensate rather than oil.

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The AIOC acted as if it believed that it could finesse other players into assuming cost and risk. However, the above-mentioned Istanbul accords (November 1999) changed the overall business

7 James, R.A. (2011) *Strategic alliances between national and international oil companies*. Working Paper 104, Stanford, Calif.: Stanford University, Program on Energy and Sustainable Development.

environment for energy development in the Caspian Sea region. Another factor driving the AIOC's new flexibility after the Istanbul accords was likely the discovery, by BP, of the Shah-Deniz gas and condensate field, where, before drilling, oil had been expected.

This unexpected discovery raised the issue of Azerbaijan's desire to put this gas into the Trans-Caspian Gas Pipeline (TCGP) from Turkmenistan. Although this find obviated the need to continue negotiations over the TCGP at the time, the organizational learning and infrastructural work done in connection with the BTC made it extremely easy to add the South Caucasus Pipeline (SCP, also BTE for Baku-Tbilisi-Erzurum) for gas along essentially the same route. The SCP, in turn, now makes TANAP possible.

Conclusion

The sociology of knowledge of global energy governance, itself a relatively new policy concept, explains in part why regional energy security governance has not really entered into global considerations. One reason is that the academic subfield of global energy governance has since its appearance paid special attention to so-called 'boundary organizations' that mediate the transfer of knowledge from its production by technically specialized, mainly university-based scientists to politically specialized decision-makers and their policy advisors.[8]

This analytical category originated among American political scientists for the study of domestic American energy policy-making. It was then exported to the field of policy studies of 'global energy governance', itself a fairly new field that developed at roughly the same time but independently. The concept of 'boundary organization' has been adapted to studies of energy governance, but its application has largely remained at the global political level, with a focus on putatively universal international conventions and treaties and on the mediation

8 For one *locus classicus*, see Guston, D.H. (1999) 'Stabilizing the boundary between US politics and science: The role of the Office or Technology Transfer as a boundary organization'. *Social Studies of Science*, 29(1), pp. 87–112. For general background, see Guston, D.H. (2001) 'Organizations in environmental policy and science: An introduction'. *Science, Technology and Human Values*, 26(4), pp. 399–408.

between the formulation and negotiation of those texts on the one hand, and on the other, the creation and distribution of scientific reports, produced to inform the process of international policy formulation.

The contrast between the two case studies summarized above underscores the need to take account of idiosyncratic regional contexts and configurations of social and political forces, in explaining political and economic outcomes. Industrial associations and energy development consortia often transmit scientifically generated industrial information (for example, geological findings on hydrocarbon deposits) to national governments or regional cooperative structures, and receive normative direction from those governments and structures. It is possible therefore to suggest that they too meet the criteria to be considered a particular type of boundary organization at the national and/or regional level. To entertain such a possibility highlights the limitations of the existing approach to global energy security relying upon the study of practice of a particular type of boundary organizations, specifically the focus by academics upon university-based research.[9]

The contrast between the two case studies summarized above underscores the need to take account of idiosyncratic regional contexts and configurations of social and political forces, in explaining political and economic outcomes.

Today, the practitioners of such an approach have a professional incentive structure that deters them from extending the approach to the study of regional energy security and cooperation, because of their focus on normative international policy-formation. It is tempting to suppose that the distinctive feature of a boundary organization, as applied within the field of global energy governance, is not just its transnational and distributed quality but also its universal policy remit.

At the same time, experts on regional energy security and cooperation have no incentives to use the categories of academic theories of international relations, because these offer no added value to their own practical and applied analyses of energy exploration and production. The latter experts may even be members of technically specialized think tanks that meet the definition of 'boundary organization' on a regional level. Yet

9 For such a criticism, see Parker, J., and Crona, B. (2012) `On being all things to all people: Boundary organizations and the contemporary research university`. *Social Studies of Science*, 42(2), pp. 262–289.

their very national or regional character leads students of (global-level) boundary organizations to exclude their consideration.

The main innovation of the 'boundary organization' concept has been to draw attention to the institutionalization of channels of such knowledge transfer, in contrast with the 'epistemic community' approach.

The main innovation of the 'boundary organization' concept has been to draw attention to the institutionalization of channels of such knowledge transfer, in contrast with the 'epistemic community' approach. Interestingly, the latter had been better equipped to take account of regional networks of cooperation at the implementation stage, albeit on the interpersonal level.[10] As explained above, there seems to be little prospect for a dialogue between global and regional specialists in energy security governance, unless another boundary organization is created in order to facilitate their dialogue; however the efficacy of proliferating boundary organizations may have a limit, given that problems of coordination also increase.[11]

Nevertheless, the conscious development of dedicated boundary organizations at the national and especially regional levels may promote regional energy security governance. This has certainly been so in the case of the European Union, but those who conduct EU studies typically decline to consider the degree to which the EU experience may be generalized to other regions of the world.

As explained above, the AIOC's reluctance to demonstrate autonomy contributed to inefficiencies in the promotion of regional energy development. The reason was that this reluctance led to severe hesitation about distributing proprietary industrial information even among consortium members. A forum managed by a fair and impartial arbiter, trusted by all consortia and concerned exclusively with analysis, that could receive information confidentially from the consortia and promote transparency without compromising industrial secrets or national interests, would have been useful.

The South Caucasus was one of the first proving-grounds for post–

10 See Haas, P.M. (1992) 'Epistemic communities and international policy coordination', *International Organization*, 46(1), pp. 1-35; Haas, P.M. (1989) 'Do regimes matter? Epistemic communities and Mediterranean pollution'. *International Organization*, 43(3), pp. 377–403; Kolodziej, E.A. (1997) 'Epistemic communities searching for regional cooperation'. *Mershon International Studies Review*, 41(1), pp. 93–98.

11 But for a still-relevant partial inventory of issues that should be addressed, see Cutler, R.M. (2006) 'Current problems of global energy security: In light of the Caspian Sea region's recent experience'. *Oil, Gas and Energy Law* 4(1), Available at: http://tinyurl.com/problem-global-energy-security (Accessed: 27 April 2015).

Cold War strategic alliances in the industry, when the collapse of international bipolarity opened new markets and created the need for companies the develop new competences and capabilities, and to do so on the basis of continuous organizational learning. Such forums, as just suggested, may even be planned as elements of a strategic alliance within the industry, in cooperation with government and even civil society.[12] There is no reason not to consider regional formations, including those outside universities (which in the 21st century no longer have a monopoly on the creation of knowledge) also to be boundary organizations, and to focus on their practical work, not just their 'boundary work' - in practice if not in theory.

12 For suggestions, see Cutler, R.M. (2007) 'The new concept of cooperative energy security'. *Oil, Gas and Energy Law* 5(4), Available at: http://tinyurl.com/new-concept-cooperative-energy (Accessed: 27 April 2015). Compare: Elmut, D., and Kathawala, Y. (2001) 'An overview of strategic alliances'. *Management Decision*, 39(3), pp. 205–217; Todeva, E. (2005) 'Strategic alliances and models of collaboration'. *Management Decision*, 43(1), pp. 123–148; and especially Grant, R.M., and Baden-Fuller, C. (2004) 'A knowledge accessing theory of strategic alliances'. *Journal of Management Studies*, 41(1), pp. 61–84. The virtues of such an approach are beginning to be recognized in the issue-area of health policy: See, for example, Drimie, S., and Quinlan, T. (2011) 'Playing the role of a "boundary organisation": Getting smarter with networking'. *Health Research Policy and Systems* 9(Supp.1), S11.