REGULATORNA POLITIKA I NJEN UTJECAJ NA PLANOVE RAZVOJA I IZGRADNJE ENERGETSKIH SUBJEKATA KOJI OBAVLJAJU REGULIRANE DJELATNOSTI

REGULATORY POLICY AND ITS IMPACT ON THE DEVELOPMENT AND CONSTRUCTION PLANS OF ENTITIES PERFORMING REGULATED ACTIVITIES

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Hrvatska energetska regulatorna agencija u prosincu 2006. godine donijela je tarifne sustave bez visine tarifnih stavki za djelatnosti proizvodnje, prijenosa, distribucije i opskrbe električnom energijom. Tarifnim sustavima utvrđena je metoda regulacije koja će se primjenjivati prilikom utvrđivanja iznosa tarifnih stavki za pojedinu djelatnost. Jedan od preduvjeta za donošenje iznosa tarifnih stavki od strane Vlade Republike Hrvatske je donošenje planova razvoja i izgradnje prijenosne i distribucijske mreže od strane energetskih subjekata koji obavljaju regulirane djelatnosti na koje Hrvatska energetska regulatorna agencija daje suglasnost.

In December 2006, the Croatian Energy Regulatory Agency – CERA (Hrvatska energetska regulatorna agencija – HERA) adopted tariff systems without stipulating the amounts of the tariff items for the activities of the generation, transmission, distribution and supply of electrical energy. A regulatory method was established through the tariff systems that will be applied in the determination of the amounts of the tariff items for individual activities. One of the prerequisites for the adoption of the amounts of tariff items by the Government of the Republic of Croatia is the adoption of the development and construction plans of the transmission and distribution networks to which the CERA issues approval.

Ključne riječi: planovi razvoja, regulatorna politika, regulatorno tijelo, regulirani energetski subjekt, tarifni sustavi
Key words: development plans, entity performing regulated activity, regulatory body, regulatory policy, tariff systems

1 UVOD

U prosincu 2006. godine Hrvatska energetska regulatorna agencija (HERA) donijela je tarifne sustave, bez visine tarifnih stavki za četiri djelatnosti čija se cijena utvrđuje na regulirani način [1]:

– proizvodnju električne energije s iznimkom povlaštenih kupaca,
– prijenos električne energije,
– distribuciju električne energije,
– opskrbu električnom energijom s iznimkom povlaštenih kupaca.

U navedenim tarifnim sustavima definirana je i regulatorna politika, odnosno metoda ekonomske regulacije, a to je metoda priznatih troškova poslovanja [2] do [5]. U teoretskim razmatranjima regulacije energetskih djelatnosti ova metoda svrstana je u klasični pristup regulaciji poznat i pod nazivom regulacija stopom povrata [6]. Tu metodu regulatorna tijela u državama članicama Europske unije (EU) sve više napuštaju i zamjenjuju metodama poticajne regulacije u kombinaciji s regulacijom kvalitete opskrbe [7], budući da se pokazalo da primjena regulacije stopom povrata potiče podizanje troškova ulaganja iznad onih koje bi subjekti koji obavljaju reguliranu djelatnost snosili da ulažu po kriteriju minimalnih troškova. Pokazalo se da u načelu regulacija stopom povrata postiže suprotan učinak od onog kojeg bi trebala osigurati ekonomska regulacija kroz nezavisno regulatorno tijelo. Ciljevi ekonomske regulacije prvenstveno su [7]:

– poticanje učinkovitosti i povećanje produktivnosti,
– osiguranje primjerene financijske sposobnosti sektora,
– sprječavanje diskriminacije kupaca i energetskih subjekata.

Regulatorna politika prema ulaganjima subjekata koji obavljaju regulirane djelatnosti jedan je od ključnih segmenata u provođenju ekonomske regulacije. Nova ulaganja, ako su prihvaćena kao dozvoljeni trošak, uključena su u regulatornu osnovicu sredstava, kroz amortizaciju i iznos dozvoljenog povrata sredstava. Regulatorno tijelo može imati značajnu ulogu u utvrđivanju opravdane razine ulaganja, a time i u postupku utvrđivanja cijene reguliranih djelatnosti. Tim više, ako se uzme u obzir činjenica da mnoga zakonska rješenja predviđaju da regulatorno tijelo daje suglasnost ili donosi planove razvoja subjekata koji obavljaju regulirane djelatnosti.

1 INTRODUCTION

In December 2006, the Croatian Energy Regulatory Agency (CERA) adopted tariff systems without stipulating the amounts of the tariff items for four activities for which the prices are determined in a regulated manner [1]:

– the generation of electrical energy, with the exception of eligible customers,
– the transmission of electrical energy,
– the distribution of electrical energy,
– the supply of electrical energy, with the exception of eligible customers.

In these tariff systems, the regulatory policy, i.e. the method of economic regulation, was defined [2] to [5]. In theoretical studies of the regulation of energy activities, this method is classified in the classical approach to regulation that is known as the rate of return (*RoR*) method [6]. This method is being increasingly abandoned by the regulatory bodies in the member countries of the European Union (EU) in favor of incentive regulation methods in combination with regulation of the quality of supply [7], since it has become evident that application of the regulation of the rate of return raises investment costs above those that entities performing regulated activities would otherwise have to pay if they invested according to the criterion of minimal costs. Furthermore, it has become evident that in principle the regulation of the rate of return achieves the opposite effect to that which should be assured by economic regulation through an independent regulatory body. The goals of economic regulation are primarily as follows [7]:

– promoting efficiency and increasing productivity,
– assuring the appropriate financial viability of the sector,
– preventing discrimination against customers and energy entities.

The regulatory policy toward the investments by entities performing regulated activities is one of the key segments in the implementation of economic regulation. New investments, if accepted as allowed expenditures, are included in the regulatory asset base (*RAB*) through depreciation and the amount of the allowed return on assets. The regulatory body, therefore, can have a significant role in determining the justified level of investment, and thereby in the procedure for the determination of the prices for regulated activities. This is even more the case when the fact is taken into account that many legal solutions anticipate that the regulatory body will issue approval or adopt the development plans of the entities performing regulated activities.

Hrvatska je na početku uvođenja ekonomske regulacije u energetskim djelatnostima, stoga se u ovom trenutku još ne mogu analizirati učinci regulatorne politike u cijelosti kao niti pojedinih regulatornih odluka. Iako su tarifni sustavi, bez visine tarifnih stavki, doneseni u prosincu 2006. godine, koliko je poznato autorima (u vrijeme predaje ovog članka uredništvu) procedura donošenja iznosa tarifnih stavki nije još započela. Za donošenje iznosa tarifnih stavki potrebno je prije svega da energetski subjekti HEP Operator prijenosnog sustava d.o.o. (HEP OPS) i HEP Operator distribucijskog sustava d.o.o. (HEP ODS) dostave HERA-i na suglasnost prijedlog trogodišnjih planova razvoja i izgradnje, a sve temeljem Zakona o tržištu električne energije [8].

Kod razmatranja planova razvoja i izgradnje prijenosne i distribucijske mreže, nameće se pitanje koje se odnosi na dubinu nadležnosti regulatornog tijela, pa tako i HERA-e, odnosno na njegovu poziciju u odnosu na davanje suglasnosti na pojedina koncepcijska rješenja, odnosno na pojedina tehnička pitanja. Naime, temeljem Zakona o tržištu električne energije [8] HEP OPS i HEP ODS donose planove razvoja i izgradnje mreža za razdoblje od tri godine tek po ishođenoj prethodnoj suglasnosti HERA-e na svoje prijedloge planova. Doneseni planovi ujedno su i ishodište za utvrđivanje iznosa tarifa. Samim zakonskim odredbama nije razvidno definirana dubina uloge HERA-e u smislu njenih ovlasti prilikom davanja tih suglasnosti.

Budući da su iskustva u Hrvatskoj u smislu utjecaja regulatornog tijela na planove razvoja i izgradnje tek u začetku, zanimljivo je analizirati ulogu drugih regulatornih tijela u donošenju planova poslovanja, tj. razvoja i izgradnje subjekata koji obavljaju regulirane djelatnosti. Iskustva regulatornih tijela članica udruženja energetskih regulatornih tijela iz Europe (*Energy Regulators Regional Association* – ERRA) [9], u kojima je regulacija i konkurentno tržište električne energije relativno novi koncept, vrlo su različita u smislu uloge regulatornog tijela u davanju suglasnosti na planove razvoja i izgradnje. U većini slučajeva regulatorna tijela ne utvrđuju kriterije planiranja razvoja prijenosne i distribucijske mreže, niti utječu na koncepcijska i tehnička rješenja koja vrlo često proizlaze iz odluka uprave tvrtki, već se njihova uloga svodi na odobravanje poslovnih planova Operatora prijenosnih sustava (OPS) i Operatora distribucijskih sustava (ODS). Paralelno odobravanju poslovnih planova, regulatorna tijela postupno uvode i razvidne kriterije kvalitete opskrbe kako bi se izbjeglo smanjenje kvalitete opskrbe zbog smanjivanja troškova kroz primjenu regulatorne metode te da bi se ujedno postiglo planiranje razvoja mreže koje za cilj ima

The Republic of Croatia is in the initial phase of introducing economic regulation into energy activities. Therefore, at this moment it is still not possible to analyze the effects of the regulatory policy in their entirety or individual regulatory decisions. For the adoption of the amounts of tariff items, it will be necessary for the HEP Transmission System Operator – HEP TSO (HEP Operator prijesnog sustava d.o.o. – HEP OPS) and the HEP Distribution System Operator – HEP DSO (HEP Operator distribucijskog sustava – HEP ODS) as energy entities to submit their proposed three-year development and construction plans to the CERA for approval, all pursuant to the Electricity Market Act [8].

When considering the development and construction plans of transmission and distribution networks, a question arises in reference to the degree of the authority of the regulatory body, and thus of the CERA, i.e. its position in relation to issuing approval for individual conceptual solutions or individual technical questions. Pursuant to the Electricity Market Act [8], the transmission system operator and the distribution system operator only adopt plans for the development and construction of networks for a period of three years after obtaining prior approval from the CERA for their proposed plans. The adopted plans are also the basis for the determination of the amounts of tariffs. The legal provisions themselves have not transparently defined the range of the CERA's role in the sense of its authority when issuing these approvals.

Since experiences in the Republic of Croatia regarding the influence of the regulatory body on development and construction plans are only in the initial phase, it is interesting to analyze the role of other regulatory bodies in the adoption of business plans, i.e. development and construction by entities performing regulated activities. The experiences of the member regulatory bodies of the Energy Regulators Regional Association (ERRA) [9], in which regulation and a competitive electrical energy market are relatively new concepts, vary considerably in the sense of the role of the regulatory body in issuing approval for development and construction plans. In the majority of cases, the regulatory bodies neither determine the criteria for planning the development of transmission and distribution networks, nor do they influence the conceptual and technical solutions that very often ensue from the decisions of company management, but instead their role is limited to approving the business plans of the transmission system operator and the distribution system operator. Together with the approval of business plans, regulatory bodies are gradually introducing transparent criteria for the quality of supply in order to avoid lowering the quality of the supply due to reduced expenditures through the application of regulatory methods in order to

povećanje učinkovitosti, odnosno povećanje kvalitete opskrbe.

Odabirom metode regulacije priznatih troškova i regulatornog razdoblja od godinu dana unutar kojeg je moguće inicirati izmjene visine tarifnih stavki, HERA nije dala naglasak na povećanje učinkovitosti subjekata koji obavljaju regulirane djelatnosti koji je jedan od glavnih ciljeva ekonomske regulacije. Imajući u vidu iskustva drugih regulatornih tijela iz EU, nužno će u skorašnje vrijeme uslijediti izmjena regulatorne metode, a time će i HERA intenzivnije pristupiti analizi ovisnosti regulatornog pristupa i razine faktora učinkovitosti primjenjujući neku od metoda poticajne regulacije. U članku se analiziraju dva regulatorna pristupa u primjeni faktora učinkovitosti i ulozi regulatornog tijela u odobravanju investicijskih planova subjekata koji obavljaju regulirane djelatnosti poznatih pod nazivom regulatorni pristup slaganja blokova (engl. *Building Blocks Appraoch*) i regulatorni pristup ukupnog troška (engl. *Total Expenditures Approach – TOTEX Approach*). O odabranom regulatornom pristupu ovisi i način na koji regulatorno tijelo ocjenjuje učinkovitost pojedinih ulaganja i razmatra opravdanost razine predviđenih ulaganja.

2 PRAKSA U ČLANICAMA ENERGY REGULATORS REGIONAL ASSOCIATION

Zemljopisno gledano ERRA je udruženje regulatornih tijela iz Europe (pojedine države ujedno su i članice EU) i bivših država Sovjetskog saveza osnovano 2000. godine. Trenutačno su u udruženju punopravno učlanjena 22 regulatorna tijela uključujući i HERA-u. Na sastancima odbora ERRA-e raspravlja se i razmjenjuju se iskustva o nadležnostima regulatornih tijela, problemima i izazovima s kojima se susreću regulatorna tijela. Jedna od nadležnosti većine regulatornih tijela je i sudjelovanje u postupku donošenja razvojnih/investicijskih planova energetskih subjekata koji se bave prijenosom i distribucijom električne energije u vidu tehničkih, financijskih ili poslovnih planova. Planovi se donose kao preduvjet za utvrđivanje metodologija za izračun cijena usluga ili donošenje samih iznosa cijena usluga. Pitanja koja se nameću prilikom rasprave o ulozi regulatornih tijela u donošenju predmetnih planova su:

– koliko duboko i detaljno regulatorno tijelo treba biti uključeno u izradu i donošenje razvojnih/investicijskih planova, posebice kada se radi o strateškim dilemama ili tehničkim rješenjima,

achieve the planned development of the network with the goal of improving efficiency, i.e. improving the quality of the supply.

Through the selection of the rate of return (*RoR*) method and a regulatory period of one year within which it is possible to initiate changes in the amounts of the tariff items, the CERA did not place emphasis on increasing the efficiency of the entities performing regulated activities, which is one of the main goals of economic regulation. Bearing in mind the experiences of other regulatory bodies from the EU, changes in the regulatory method will have to follow soon, and the CERA will have to intensify its analysis of the dependence of the regulatory approach and the level of the efficiency factor, applying some incentive regulation method. In this article, two regulatory approaches are analyzed in the application of the efficiency factor and the roles of the regulatory body in the approval of the investment plans of entities performing regulated activities, known as the building block approach, and the regulatory approach known as the total expenditure approach or the *TOTEX* approach. The choice of the regulatory approach will also determine the manner in which the regulatory body will assess the performance of individual investments and analyze the justification for the level of individual investments.

2 PRACTICES AMONG THE MEMBERS OF THE ENERGY REGULATORS REGIONAL ASSOCIATION (ERRA)

Viewed geographically, the ERRA is an association of the energy regulatory bodies from Europe (some of the countries are also members of the EU) and the former the Soviet Union, which was established in the year 2000. Currently, there are twenty-two regulatory bodies that are full members, including the CERA. At the meetings of the ERRA committees, experiences are discussed regarding the authorities of the regulatory bodies, together with the problems and challenges encountered by the regulatory bodies. One of the authorities of the majority of the regulatory bodies is participation in the procedure for the adoption of the development/investment plans of the energy entities engaged in the transmission and distribution of electrical energy, regarding technical, financial or business plans. Plans are adopted as a prerequisite for the determination of the methodologies for the calculation of the prices for services or the adoption of the amounts of the prices of the services. Questions posed during the discussions on the role of the regulatory bodies in the adoption of these plans are as follows:

– treba li regulatorno tijelo biti ta instanca koja će utvrditi jedinični trošak pojedine opreme,
– koje sastavne dijelove mora sadržavati svaki razvojni/investicijski plan.

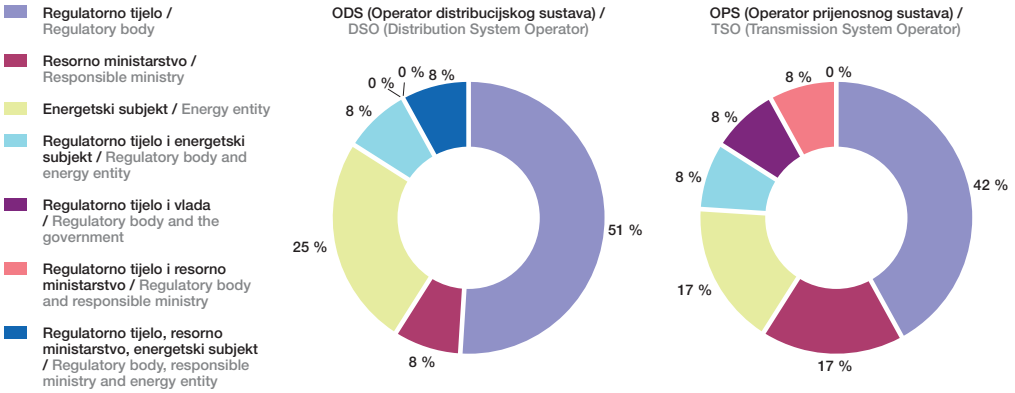
Na ova pitanja i dileme ERRA-in Odbor za tarife i cijene pokušao je u 2005. godini odgovoriti kroz analizu iskustava država članica [9]. Međutim, provedena analiza je pokazala da se uloga regulatornog tijela u donošenju razvojnih/investicijskih planova značajno razlikuje ovisno o zakonskim rješenjima, nadležnostima regulatornih tijela te stručnoj, tehničkoj i financijskoj osposobljenosti regulatornih tijela.

Upitnik koji je tom prilikom pripremljen, analiziran i prezentiran sadrži 33 pitanja. Svoje odgovore na pitanja iz Upitnika dala su regulatorna tijela iz 12 država (Armenija, Bosna i Hercegovina, Bugarska, Hrvatska, Estonija, Gruzija, Latvija, Litva, Makedonija, Poljska, Rumunjska i Ukrajina). U državama koje su odgovorile na Upitnik broj OPS-ova uglavnom je jedan, dok se broj ODS-ova kreće između 1 i više od 200 (Poljska). U većini država regulatorno tijelo daje suglasnost na razvojne/investicijske planove OPS-a i ODS-a (slika 1). Međutim, postoje i rješenja u kojima regulatorno tijelo nije uključeno u proces donošenja planova, već je to npr. u potpunosti u nadležnosti energetskih subjekata. Razdoblje na koje se donose planovi kreće se od jedne do deset godina, kako za OPS tako i za ODS.

– how deep and thorough should a regulatory body's involvement be in the preparation and adoption of development/investment plans, especially regarding strategic dilemmas or technical solutions?
– should the regulatory body be the one to define the unit costs of individual types of equipment?
– what are the integral parts that every development/investment plan should have?

In 2005, the ERRA Tariff/Pricing Committee attempted to answer these questions and dilemmas through analysis of the experiences of the member countries [9]. However, the analysis performed demonstrated that the roles of the regulatory bodies in the adoption of development/investment plans vary significantly, depending upon the legal solutions, the authorities of the regulatory bodies and the professional, technical and financial abilities of the regulatory bodies.

The questionnaire that was prepared, analyzed and presented on this occasion has thirty-three questions. The regulatory bodies from twelve countries (Armenia, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Latvia, Lithuania, Macedonia, Poland, Rumania and the Ukraine) answered the questions on the questionnaire. In the countries that responded to the questionnaire, the number of TSO (transmission system operators) is generally one, while the number of DSO (distribution system operators) ranges between one and over two hundred (Poland). In the majority of the countries, the regulatory body issues approval for the development/investment plans of the transmission system operators and distribution system operators (Figure 1). However, there are also solutions in which the regulatory body is not included in the process of the adoption of plans but instead, for example, the energy entities have full authorization for this. The periods for which plans are adopted range from one to ten years, for both transmission system operators and distribution system operators.



Slika 1
Raspodjela nadležnosti davanja suglasnosti na planove razvoja/ investicija ODS-a i OPS-a u članicama ERRA-e (analiza je provedena za 12 država)
Figure 1
Distribution of authority for issuing approval for the development/ investment plans of distribution system operators and transmission system operators among the members of ERRA. (Analysis was performed for twelve countries)

Pitanja koja su zanimljiva za ulogu regulatornog tijela u donošenju planova posebice se odnose na dubinu regulatornog utjecaja u području:

– tehničkih rješenja, npr. zamjena elektro-mehaničkih digitalnim mjernim uređajima,
– koncepcijskih dilema u razvoju visokonaponske (VN) i srednjonaponske (SN) mreže, kao što je npr. interpolacija SN/SN trafostanica,
– troška građevinskih radova,
– utvrđivanja jediničnih troškova opreme.

Prva dva područja u načelu su u većini država u nadležnosti energetskih subjekata i stvar su odluke OPS-a, odnosno ODS-a. Utvrđivanje troškova za druga dva navedena područja proizlazi iz javnih nabava. Isto tako, kada se analizira tko je nadležan za utvrđivanje kriterija za planiranje prijenosne i distribucijske mreže, proizlazi da su to prvenstveno energetski subjekti, a ne regulatorna tijela (slika 2).

Postavlja se pitanje koja je onda stvarna uloga regulatornih tijela u donošenju planova razvoja/investicija OPS-a/ODS-a, odnosno kakav utjecaj može imati regulatorno tijelo na dinamiku i visinu investicija, kao i na koncepcijska rješenja. Budući da je većina analiziranih regulatornih tijela u načelu tek u početku primjene regulatorne prakse te uspostavljanja kompetentnog i stručno osposobljenog regulatornog tijela, u većini slučajeva regulatorna uloga se svodi na analizu i nadzor financijskih i računovodstvenih izvješća, a ne na utvrđivanje kriterija za tehnička rješenja i odobravanje opravdane visine pojedinih investicija. Kao ilustrativni primjer financijskog, odnosno poslovnog, nadzora može se navesti praksa u pojedinim državama članicama ERRA-e koje su odgovorile na pitanje iz upitnika koje se odnosi na financijske i poslovne kriterije utvrđene za regulatorni nadzor energetskih subjekata.

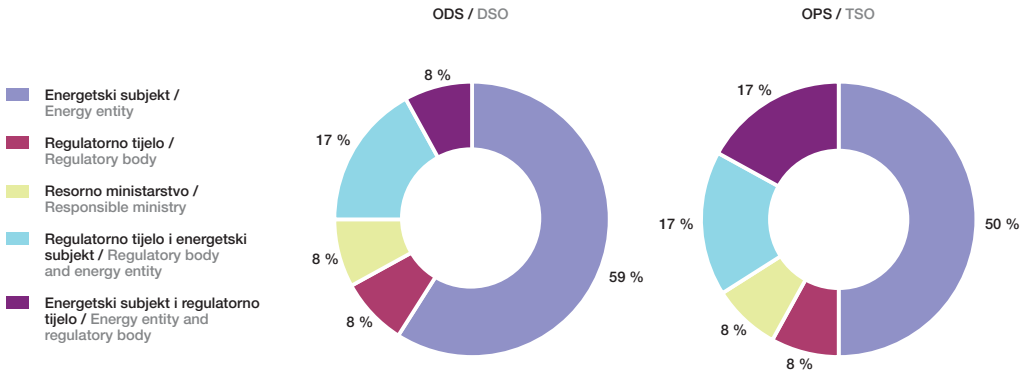
Questions of interest regarding the role of the regulatory body in the adoption of plans particularly refer to the extent of regulatory influence in the following areas:

– technical solutions, e.g. the replacement of electromechanical metering devices with digital ones,
– conceptual dilemmas in the development of high voltage and medium voltage networks, such as, for example, the interpolation of MV/MV substations,
– costs of construction work, and
– the determination of the unit costs of equipment.

In the majority of the countries, the first two areas are in principle under the authority of the energy entities and matters for decision by the transmission system operator or the distribution system operator. The definition of costs for the other two areas mentioned comes from public procurements. Similarly, it is primarily the energy entities and not the regulatory bodies which are authorized to define the criteria for the planning of transmission and distribution networks (Figure 2).

Therefore, the question is posed concerning the actual roles of the regulatory bodies in the adoption of the development/investment plans of transmission system operators and distribution system operators, i.e. what influence can a regulatory body have on the dynamics and amount of investment, as well as on the conceptual solution. Since the majority of the analyzed regulatory bodies in principle are only beginning to apply regulatory practices in the establishment of competent and professionally qualified bodies, in the majority of cases the regulatory role is limited to the analysis and audit of financial and accounting reports, and not the determination of the criteria for the technical solutions and the approval of the justified amounts of individual investments. An illustrative example of financial or operational supervision is the practice in some member countries of the ERRA which responded to the questions on the questionnaire that refer to the financial and operational criteria established for the regulatory supervision of energy entities.

Slika 2
Raspodjela nadležnosti za utvrđivanje kriterija za planiranje prijenosne i distribucijske mreže u članicama ERRA-e (analiza je provedena za 12 država)
Figure 2
The distribution of authority for the determination of criteria for the planning of transmission and distribution networks among member countries of the ERRA (analysis of 12 countries)



U Bugarskoj se financijski nadzor provodi na temelju odabranih financijskih pokazatelja koji su utvrđeni kao pokazatelji od važnosti za regulatorni nadzor. Analiza ovih pokazatelja trebala bi odgovoriti na pitanje primjenjuju li energetski subjekti mjere utvrđene od strane regulatornog tijela koje za cilj imaju povećanje ekonomske učinkovitosti proizašle iz primjene poticajne regulacije. U Latviji tarifna metodologija utvrđuje način na koji se dostavlja prijedlog tarifa, odnosno utvrđuje set potrebnih podataka koje je potrebno dostaviti regulatornom tijelu. U Ukrajini nadzor poslovnih planova provodi se kroz računovodstveni nadzor i izvješća za potrebe regulatornog tijela. Poslovni, odnosno investicijski planovi između ostalog moraju sadržavati iznos godišnjeg budžeta, izvor financiranja te detaljnu elaboraciju troškova. Za ukrajinsko regulatorno tijelo potrebno je naglasiti da već dugi niz godina primjenjuje razne vrste metoda ravnanja prema mjerilu (engl. *benchmarking*) za koje je podatak o troškovima za pojedinačne investicije više nego dobrodošao.

Odgovori na Upitnik pokazali su da u većini država regulatorno tijelo provodi nadzor nad realizacijom predviđenih investicija tijekom postupka utvrđivanja tarifa za novo regulatorno razdoblje. Ono što je bitno kod utvrđivanja cijena usluga i uključivanja pojedinih troškova u razinu prihoda energetskog subjekta odobrenog od strane regulatornog tijela je realizacija investicija iz investicijskog ciklusa. Naime, ukoliko je pojedina investicija odobrena i uključena u investicijske planove, te su za istu alocirana potrebna sredstva u regulatornom razdoblju, tu istu investiciju ne može se uključiti u regulirani trošak u novom regulatornom razdoblju. Proizlazi da je nadzor regulatornog tijela vrlo bitan u segmentu nadzora nad realizacijom investicijskih planova subjekata koji obavljaju regulirane djelatnosti.

Ukoliko energetski subjekt ne realizira predviđeni investicijski ciklus, u pojedinim državama (Armenija, Latvija, Litva, Poljska, Ukrajina), u sljedećem regulatornom razdoblju dolazi do smanjenja iznosa reguliranih tarifnih stavki. No, moguća su i drastičnija rješenja, kao npr. u Armeniji, gdje regulatorno tijelo osim smanjenja iznosa tarifnih stavki može izreći upozorenje ili oduzeti dozvolu za obavljanje energetske djelatnosti. Međutim, ukoliko se radi o OPS-u, postavlja se pitanje tko će obavljati djelatnost ukoliko se oduzme dozvola. Nadalje, kao sankcija za neispunjavanje investicijskog ciklusa, moguće su i novčane kazne, npr. u Ukrajini do 16 000 američkih dolara. I u hrvatskom zakonu [8] predviđena je novčana kazna za energetski subjekt u iznosu do 50 000 kuna ukoliko ne izrađuje planove razvoja i izgradnje, odnosno ukoliko ih ne

In Bulgaria, financial supervision is performed on the basis of selected financial indices that are determined as indices of importance for regulatory supervision. Analysis of these indices should answer the question of whether energy entities apply the measures determined by the regulatory body with the goal of achieving increased economic performance through the application of incentive regulations. In Latvia, the tariff methodology determines the manner in which a proposed tariff should be submitted, i.e. determines the set of necessary data that must be submitted to the regulatory body. In the Ukraine, supervision of business plans is performed through accounting supervision and reports for the purposes of the regulatory body. Business or investment plans, among other things, must contain the amount of the annual budget, the source of financing and a detailed elaboration of costs. For the Ukrainian regulatory body, it is necessary to emphasize that various types of methods based upon benchmarking have been applied for many years, for which data on the costs for individual investments are more than welcome.

Responses to the questionnaire showed that in the majority of the countries, the regulatory body supervises the implementation of planned investment through the procedure of determining the tariffs for the new regulatory period. What is important in the determination of the prices for services and the inclusion of individual costs in the level of the revenues of the energy entity approved by the regulatory body is the implementation of investment from the investment cycle. Insofar as an individual investment is approved and included in investment plans, and the necessary assets are allocated for it in the regulatory period, this same investment cannot be included in the regulated expenditures in the new regulatory period. Therefore, it follows that supervision by the regulatory body is very important in the segment of supervising the implementation of the investment plans of a entities performing regulated activities.

If an energy entity does not implement a planned investment cycle, in some countries (Armenia, Latvia, Lithuania, Poland and the Ukraine) there is a reduction in the amounts of the regulated tariff items in the subsequent regulatory period. However, even more drastic solutions are possible, such as, for example, in Armenia where the regulatory body, in addition to reducing the amounts of the tariff items, can also issue a warning or revoke the license for performing energy operations. However, when this concerns a transmission system operator, the question is asked who will perform the activity if the license is revoked. Furthermore, monetary fines can be imposed as penalties for not fulfilling an investment cycle such as, for example, in the Ukraine of up to USD 16 000.

izrađuje temeljem Strategije energetskog razvitka i Programa provedbe Strategije.

Radi lakše provedbe postupka davanja suglasnosti na planove od strane regulatornog tijela i kasnijeg nadzora nad provedbom planova u pojedinim državama (Bugarska i Ukrajina) struktura sadržaja planova je predefinirana. U Litvi razvojni/investicijski planovi moraju zadovoljiti nužan minimum sadržaja planova, a to je:

– obrazac potpisan od strane odgovorne osobe sa svim potrebnim podacima djelatnika (imena, telefon, e-mail adresa) koji su sudjelovali u izradi planova,
– popis planiranih investicija koje moraju biti u skladu sa strategijom razvoja i dugoročnim planovima razvoja mreža, uključujući iznos potrebnih financijskih sredstava, izvore financiranja, terminski plan i slično,
– pisano obrazloženje u vidu investicijskog plana za razdoblje od tri godine iz kojeg je vidljiv učinak pojedine investicije, kako u tehničkom tako i ekonomskom, socijalnom i ekološkom pogledu. Isto tako potrebno je navesti utjecaj pojedine investicije na cijenu, kvalitetu usluge i sl. U odgovoru na pitanje iz Upitnika nije navedeno do koje naponske razine ili koje visine investicije je potrebno pisati ovako detaljna pojašnjenja razloga za pojedinu investiciju,
– energetski subjekt treba osigurati i druge podatke ili dokumente ukoliko regulatorno tijelo ustanovi da su potrebni za mjerodavan stav regulatornog tijela.

U dijelu Upitnika koji se odnosi na povezanost planova i regulatornih parametara, kao što je to stopa povrata na kapital, većina regulatornih tijela odgovorila je da institucija koja odobrava planove ne treba predefinirati pojedine regulatorne parametre kojima bi se služili u analizi planova. Izuzetak je Bugarska u kojoj regulatorno tijelo može dati instrukcije, u smislu davanja informacije o aproksimativnom iznosu pojedinih regulatornih parametara, kao što je npr. stopa povrata na kapital kojom se energetski subjekt može koristiti prilikom izrade planova razvoja/investicija.

Under Croatian law [8], a monetary fine for an energy entity in the amount of up to 50 000 kunas is stipulated if development and construction plans are not prepared, i.e. if they are not prepared according to the Energy Development Strategy and the Program for the Implementation of the Strategy.

To facilitate implementation, the procedures for issuing approval for plans by the regulatory body and subsequent supervision of the implementation of plans in some countries (Bulgaria and the Ukraine), the structure of the content of the plans are predefined. In Lithuania, development/investment plans must include the necessary minimum contents of the plans, as follows:

– a form should be signed by the responsible persons, with all the necessary data on the employees (names, telephone numbers and e-mail addresses) who participated in the preparation of the plans,
– there should be a list of the planned investments, which must be pursuant to the development strategy and long-range plans for the development of the network, including the amount of the necessary financial assets, the sources of financing, schedule etc.,
– there should be a written explanation regarding the investment plan for the period of three years, from which the impact of individual investments is visible, in the economic, social and ecological aspects. Furthermore, it is necessary to state the impact of individual investments on price, quality of service etc. The responses to a question from the questionnaire do not indicate the voltage level or the level of investment that require a detailed written explanation of the reasons for an individual investment,
– the energy entity should also provide other data or documents if the regulatory body deems that they are necessary in order for it to determine its position.

In the part of the questionnaire that refers to the connection between plans and regulatory parameters, such as the rate of return on capital, the majority of the regulatory bodies answered that the institution that approves plans does not have to predefine the individual regulatory parameters that it would use in the analysis of the plans, with the exception of Bulgaria in which the regulatory body can provide instructions in the sense of furnishing information on the approximate amounts of regulatory parameters, such as, for example, the rate of return on capital that an energy entity can use in preparing development/investment plans.

Zaključak koji se može izvući iz odgovora na pitanja iz Upitnika je da regulatorna tijela ukoliko imaju u nadležnosti davanje suglasnosti na planove razvoja/investicija OPS-a i ODS-a, u načelu suglasnost daju na mogućnost realizacije predviđenih investicija u financijskom pogledu te na rezultate koji se postižu predviđenim investicijama. Pod rezultatima smatra se povećanje učinkovitosti subjekata koji obavljaju regulirane djelatnosti ili povećanje razine kvalitete opskrbe. Ono što je potrebno naglasiti kao zaključak razmatranja odgovora na Upitnik je da se analizirana regulatorna tijela ne miješaju u koncepcijska tehnička rješenja u planovima razvoja i izgradnje mreža.

Da bi se moglo govoriti o povećanju učinkovitosti koja je rezultat primjene poticajne regulacije i o utjecaju razine odobrenih investicija na razinu dozvoljenog prihoda reguliranog subjekta, potrebno je dati prikaz, odnosno analizu, mogućih regulatornih politika u primjeni poticajne regulacije. Pri tome važnu ulogu ima osnovica na koju se primjenjuje faktor učinkovitosti te dinamika realizacije predviđenih investicija i amortizacijska politika.

3 UTJECAJ REGULATORNE POLITIKE NA DOZVOLJENI PRIHOD

Do sada je bilo riječi o nadležnosti regulatornog tijela u donošenju planova razvoja/investicija, a da se pri tome nije analizirala regulatorna politika u kojoj važnu ulogu ima cilj koji se želi postići pojedinim investicijskim ciklusom te razina odobrenih investicija koje se uključuju u regulirane troškove. Kontekst regulatorne politike koji se razmatra u ovom članku prvenstveno se odnosi na poticajnu regulaciju čije su značajke u detalje razmatrane u literaturi pod [6], a za koju je, ukoliko se radi o metodi regulacije maksimalnog prihoda, karakteristična sljedeća formula:

The conclusion that can be drawn from the responses to the questions on the questionnaire is that the regulatory bodies, insofar as they have the authority to approve the development/investment plans of the transmission system operator and the distribution system operator, in principle issue approval based upon the feasibility of the implementation of the planned investments in the financial aspect and based upon the results to be achieved by the planned investments. Results include the increased efficiency of the entities performing regulated activities or improved quality of the supply. It is necessary to emphasize that a conclusion drawn from a review of the responses to the questionnaire is that the analyzed regulatory bodies do not interfere in the conceptual technical solutions of the network development and investment plans.

In order to speak about the increased efficiency resulting from the application of incentive regulations and the impact of the level of approved investments on the level of the allowed revenue of entities performing regulated activities, it is necessary to provide a presentation, i.e. an analysis, of the potential regulatory policies in the application of incentive regulations. Important roles are played by the base upon which the efficiency factor is applied, the dynamics of the implementation of planned investments and the depreciation policy.

3 THE IMPACT OF REGULATORY POLICIES ON ALLOWED REVENUE

Thus far, the authority of the regulatory body in the adoption of development/investment plans has been discussed without analyzing the regulatory policies, in which the desired goal to be achieved by an individual investment cycle and the level of approved investments included under regulated expenditures have important roles. The context of the regulatory policies that are discussed in this article primarily refers to incentive regulation, the characteristics of which are discussed in detail in the literature [6], and for which, insofar as they concern methods for the regulation of maximum revenue, are characterized by the following formula:

$$P_{\max t} = (1 + CPI_t - X_t) \cdot P_{\max(t-1)} - KP_t \qquad R_{\max t} = (1 + CPI_t - X_t) \cdot R_{\max(t-1)} - KP_t \quad (1)$$

gdje je:

$P_{\max t}$ – gornja granica dozvoljenog prihoda u godini t,

where:

$R_{\max t}$ – the upper limit of revenue, i.e. revenue-cap, in year t,

$P_{\max (t-1)}$ – gornja granica dozvoljenog prihoda u godini t -1,
CPI_t – indeks potrošačkih cijena u godini t,
X_t – faktor učinkovitosti u godini t,
KP_t – faktor korekcije u godini t.

Mehanizam poticajne regulacije prije svega nastoji kroz poticaje (X-faktor) povećati učinkovitost energetskih subjekta. Pri tome vrijedi pretpostavka da je energetski subjekt u stanju kontrolirati razinu svojih troškova. Za troškove za koje se smatra da ih energetski subjekt ne može kontrolirati, odnosno da su izvan kontrole subjekta, kao što su to npr. porezi, naknada za regulaciju, troškovi koje je prouzročila viša sila i sl., ne može se očekivati povećanje učinkovitosti subjekta na račun njihovog smanjenja. Stoga se poticaji primjenjuju na razinu kontroliranih troškova, dok se nekontrolirani troškovi smatraju prolaznim i u cjelokupnom iznosu se prebacuju na kupca. Detaljna elaboracija granice između kontroliranih i nekontroliranih troškova zahtijeva dublje analize od strane regulatornog tijela. Kao primjer troškova koji se mogu svesti u sferu kontroliranih i nekontroliranih troškova su troškovi tehničkih gubitaka u mreži. Ukoliko regulatorno tijelo smatra da su gubici u potpunosti nekontrolirani trošak, prihvaća njihovu razinu, odnosno njihov trošak, u iznosu koji prijavljuje energetski subjekt. U tom slučaju energetski subjekt neće imati nikakav poticaj da ih smanji, bilo u vidu troška bilo u vidu fizičkih gubitaka izraženih u kWh. Međutim, ukoliko ih regulatorno tijelo smatra kontroliranim troškom, nastojat će ih kroz regulatornu politiku svesti u granice koje se sa stajališta regulatornog tijela čine opravdanima.

Kada se radi o kontroliranim troškovima, regulatorna politika razlikuje dvije grupe troškova:

– operativne troškove (engl. *Operating Expanditures* – *OPEX*), troškovi koje je moguće kontrolirati u kratkoročnom razdoblju i
– kapitalne troškove (engl. *Capital Expanditures* – *CAPEX*), troškove koje je moguće kontrolirati u dugoročnom razdoblju.

U *OPEX* se ubrajaju troškovi osoblja, materijalni troškovi, troškovi održavanja, ostali troškovi poslovanja i sl. Troškovi koje je moguće prilagođavati u relativno kratkom roku. S druge pak strane, *CAPEX* se u kratkoročnom razdoblju može promatrati kao fiksni trošak budući da se i prvenstveno radi o troškovima koji se vežu uz investicije u razvoj mreža i poboljšanje kvalitete opskrbe. *CAPEX* je moguće podijeliti u dvije grupe – amortizaciju i povrat sredstava koji se definira kao godišnja stopa povrata primijenjena na neamortizirani dio ulaganja. Povrat sredstava u načelu utvrđuje regulator-

$R_{\max (t-1)}$ – the upper limit of revenue, i.e. revenue-cap, in year t -1,
CPI_t – the consumer price index in year t,
X_t – the efficiency factor in year t,
KP_t – the correction factor in year t.

The mechanism of incentive regulation primarily attempts to increase the efficiency of energy entities through incentives (the X-factor). It is presumed that an energy entity is in a position to control the level of its expenditures. For expenditures presumed to be non-controllable by an energy entity, i.e. that are out of the control of the entity, such as, for example, taxes, regulation charges, expenditures due to force majeure etc., it is not possible to expect that the entity will achieve increased efficiency by reducing them. Therefore, incentives are applied at the level of controllable costs, while non-controllable costs are considered to be transitory and are transferred in their entirety to the customers. A detailed elaboration of the boundary between controllable and non-controllable expenditures requires in-depth analysis by the regulatory body. An example of expenditures that can be classified within the spheres of both controllable and non-controllable expenditures are the costs of technical losses in the network. Insofar as the regulatory body considers the losses to be entirely non-controllable expenditures, it accepts their level, i.e. their cost, in the amount that the energy entity reports. In this case, the energy entity will not have any incentive to reduce them, whether in the aspect of expenditures or the aspect of physical losses expressed in kWh. However, insofar as the regulatory body considers them to be controllable expenditures, it will attempt to lower them through regulatory policy to within the limits considered justified from the standpoint of the regulatory body.

Concerning controllable expenditures, regulatory policy differentiates between two groups of expenditures:

– Operating expenditure – *OPEX*, expenditure that can be controlled within a short-term period
– Capital expenditure – *CAPEX*, expenditure that can be controlled within a long-term period.

Under *OPEX* are included personnel costs, material costs, maintenance costs, other operating costs etc. These are expenditures that can be adjusted within a relatively short period. On the other hand, *CAPEX* can be considered as fixed expenditures within a short-term period, primarily concerning expenditures in connection with investment in network development and improvement in the quality of the supply. *CAPEX* can be divided into two groups – depreciation and return on assets, defined as the annual rate of return applied to the non-depreciated portion of investment. In principle, the return

no tijelo na osnovi troška kapitala subjekata koji obavljaju regulirane djelatnosti [7].

Imajući u vidu da regulatorno tijelo u načelu može regulirati dvije kategorije troškova, moguće je definirati dva pristupa u regulaciji. Prvo, regulatorno tijelo može primjenjujući pojedinu metodu poticajne regulacije zasebno razmatrati *OPEX* i *CAPEX*. Ovakav pristup poznat je pod nazivom regulatorni pristup slaganja blokova, budući da se sastoji od dvije komponente, odnosno bloka, za koje regulatorno tijelo pojedinačno utvrđuje opravdanu razinu.

Drugi pristup se odnosi na regulatornu politiku u kojoj regulatorno tijelo *OPEX* i *CAPEX* razmatra kao integrirani trošak na koji se sumarno primjenjuje odabrana metoda poticajne regulacije. Ovakav pristup poznat je pod nazivom regulatorni pristup ukupnog troška. *TOTEX* označava sumu *OPEX*-a i *CAPEX*-a. U nastavku razmatra se svaki od pristupa pojedinačno.

3.1 Regulatorni pristup slaganja blokova

U regulatornom pristupu slaganja blokova regulatorno tijelo mora odvojeno analizirati učinkovitu, odnosno opravdanu razinu, *OPEX*-a i *CAPEX* -a. Pri ocjenjivanju razine učinkovitosti i opravdanosti *OPEX*-a čest je slučaj da regulatorna tijela koriste razne metode ravnanja prema mjerilu [7]. Međutim, utvrđivanje faktora učinkovitosti X u formuli za poticajnu regulaciju (1) zahtijeva puno složeniji postupak, uključujući i diskrecijske odluke regulatornih tijela, od direktnog uvrštavanja rezultata dobivenih primjenom neke od poznatih metoda ravnanja prema mjerilu.

Dozvoljena razina *CAPEX*-a utvrđuje se na osnovi investicijskih planova energetskih subjekata predviđenih za sljedeće regulatorno razdoblje. Na osnovi predloženih investicija, regulatorno tijelo procjenjuje koje investicije uključiti u regulatornu osnovicu sredstava. Investicije koje su uključene u regulatornu osnovicu sredstava bit će u potpunosti uključene u trošak amortizacije te će se na neamortizirani dio primijeniti stopa povrata na uloženi kapital.

Čest je slučaj da se predviđena razina investicija promatra kao trošak koji se prihvaća na razini prijedloga energetskih subjekata. Ukoliko regulatorno tijelo u potpunosti prizna predložene investicije, kod energetskog subjekta se stvara poticaj da prikazuje što veću razinu budućih investicija ne vodeći se opravdanim razlozima kao što su smanjenje gubitaka u mreži ili postizanje optimalne, odnosno propisane razine kvalitete opskrbe. Pri tome energetski subjekt ima u vidu da će se veća

on assets is determined by the regulatory body on the basis of the capital expenditures of the entities performing regulated activities [7].

Bearing in mind that the regulatory body can in principle regulate the two categories of expenditures, it is possible to define two approaches to regulation. First, when the regulatory body applies an individual incentive regulation method, it can consider *OPEX* and *CAPEX* separately. Such an approach is known as the building block approach, since it consists of two components, i.e. blocks, for which the regulatory body determines the justifiable levels individually.

The second approach refers to the regulatory policy in which the regulatory body considers *OPEX* and *CAPEX* as an integrated expenditure, to which the selected incentive regulation method is summarily applied. Such an approach is known as the total expenditure, *TOTEX*, regulatory approach. *TOTEX* represents the sum of *OPEX* and *CAPEX*. Each approach will be discussed separately.

3.1 The building block regulatory approach

In the building block regulatory approach, the regulatory body must analyze the efficiency or justified level of *OPEX* and *CAPEX* separately. In assessing the efficiency and justified level of *OPEX*, a regulatory body frequently employs various benchmarking methods [7]. However, the determination of the efficiency factor X in the formula for incentive regulation (1) requires a far more complex procedure, including discretional decisions by the regulatory bodies, such as the direct classification of the results obtained from the application of some of the well-known benchmarking methods.

The allowed level of *CAPEX* is determined on the basis of the investment plans of energy entities for the subsequent regulatory period. On the basis of the proposed investments, the regulatory body assesses which investments to include in the regulatory asset base (*RAB*). Investments that are included in the regulatory asset base will be fully included in the depreciation cost, and the return rate on invested capital will be applied to the non-depreciated part.

It is frequently the case that the investment level is considered as an expenditure which is accepted at the level of the proposals by the energy entities. Insofar as the regulatory body recognizes the proposed investments in full, incentive is created for the energy entity to show the highest possible level of future investments, whether or not they are based upon justified reasons such as reducing losses in the network or achieving the optimal, i.e.

razina investicija uključiti u regulatornu osnovicu sredstava, a time će biti i veći povrat sredstava, što će se u konačnici odraziti i na profite. Energetskom subjektu bit će u interesu prikazati što veće investicije u budućem regulatornom razdoblju. Povodeći se tim načelom postoji i mogućnost da pojedine *OPEX* troškove energetski subjekt prikaže kao *CAPEX*. Na taj način pojedini *OPEX* troškovi nisu uključeni u poticajni mehanizam povećanja učinkovitosti na razini *OPEX* troškova. Time će se postići privid manjih *OPEX* troškova, odnosno postizanje veće učinkovitosti energetskog subjekta u sferi *OPEX* troškova. Strateška alokacija *OPEX*-a pod *CAPEX*, odnosno povećanje regulatorne osnovice sredstava na taj način, uočena je već u nekim slučajevima regulatornog nadzora posebice u Velikoj Britaniji [10].

Postavlja se pitanje na koji način regulatorno tijelo može reagirati ukoliko se tijekom regulatornog razdoblja ne realiziraju sve predviđene investicije odobrene od strane regulatornog tijela. Ukoliko se pokaže da nisu realizirane sve predviđene investicije, regulatorno tijelo može u sljedećem regulatornom razdoblju utvrditi niže cijene usluga, odnosno može ne dozvoliti ponovno uključivanje nerealiziranih investicija u regulatornu osnovicu sredstava. Međutim, da bi regulatorni pristup bio dosljedan i razvidan za obje strane, regulatorno tijelo i energetski subjekt, regulatorno tijelo može utvrditi donju i gornju granicu za realizaciju investicija iz plana poslovanja i razvoja. Prekomjerne investicije neće biti uopće uključene u regulatornu osnovicu sredstava ili će biti uključene samo djelomično. Ono što predstavlja problem u takvom regulatornom pristupu je da energetski subjekt nema poticaja za povećanje učinkovitosti u segmentu *CAPEX* -a. Naime, ukoliko se ostvari manji *CAPEX* od predviđenog, regulatorno tijelo će u načelu u budućem regulatornom razdoblju kao osnovicu za izračun imati manji *CAPEX*, bez obzira da li se radi o uštedama na račun podinvestiranosti (manjeg razmjera investicija od odobrenih) ili o povećanju produktivnosti energetskog subjekta. Energetski subjekt ne ostvaruje nikakve financijske koristi od povećanja učinkovitosti u segmentu *CAPEX* -a.

the stipulated, level of supply quality. The energy entity must bear in mind that a higher level of investment will be included in the regulatory asset base and, therefore, there will be a greater return on assets, which will ultimately reflect upon profits. Consequently, it is in the interest of the energy entity to show the maximum investments in the future regulatory period. Consequently, there is also the possibility that an individual *OPEX* by an energy entity is shown as a *CAPEX*. In this manner, individual operating expenditures are not included in the incentive mechanism for increasing efficiency at the level of *OPEX*. In this manner, apparently lower operating expenditures will be achieved, i.e. greater efficiency of the energy entity in the sphere of *OPEX*. The strategic allocation of operating expenditures under capital expenditures, i.e. increasing the regulatory asset base in this manner, has already been noted in some cases of regulatory supervision, especially in Great Britain [10].

The question is posed regarding how a regulatory body can react if all the planned investments that it has approved have not been made during a regulatory period. Insofar as all the planned investments have not been implemented, during the subsequent regulatory period the regulatory body can set lower prices for services or can prohibit non-implemented investments from being included in the regulatory asset base again. However, in order for the regulatory procedure to be consistent and transparent for both sides, the regulatory body and the energy entity, the regulatory body can set lower and upper limits for the implementation of investment from the business and development plans. Excessive investment will not be included in the regulatory asset base or will be included only in part. What represents a problem in such a regulatory approach is that an energy entity does not have any incentive to increase efficiency in the *CAPEX* segment. If there is lower *CAPEX* than anticipated, in principle the regulatory body will have lower *CAPEX* as a base for calculation in the subsequent regulatory period, regardless of whether this concerns savings at the expense of under investment (lower investment than approved) or increased productivity by the energy entity. Therefore, the energy entity does not derive any financial benefits from increasing efficiency in the *CAPEX* segment.

Tablica 1 – Pojednostavljen primjer izračuna dozvoljenog prihoda primjenom regulatornog pristupa slaganja blokova
Table 1 – Simplified example of the calculation of the allowed revenue through the application of the building block regulatory approach

Regulatorni parametri / Regulatory parameters	
OPEX – faktor učinkovitosti / *OPEX* – efficiency factor	90 %
Godišnje smanjenje *OPEX*-a / Annual reduction in *OPEX*	2,60 %
Razdoblje amortizacije (godina) / Depreciation period (years)	20
Stopa povrata / Rate of return	7 %

	Godine / Year				
	0.	1.	2.	3.	4.
	(10^6 HRK)	(10^6 HRK)	(10^6 HRK)	(10^6 HRK)	(10^6 HRK)
Odobrene investicije / Authorized investments		1 000,00	1 200,00	1 000,00	1 400,00
Odobrena amortizacija / Authorized depreciation					
– od prethodnih investicija / from previous investments		700,00	700,00	700,00	700,00
– od investicija iz 1. godine / from investments from the 1st year		50,00	50,00	50,00	50,00
– od investicija iz 2. godine / from investments from the 2nd year			60,00	60,00	60,00
– od investicija iz 3. godine / from investments from the 3rd year				50,00	50,00
– od investicija iz 4. godine / from investments from the 4th year					70,00
– Ukupno odobrena amortizacija / Total authorized depreciation		750,00	810,00	860,00	930,00
Izračun regulatorne osnovice (*ROS*) / Calculation of the regulatory asset base (*RBA*)					
– početni *ROS* / initial *RBA*		3 000,00	3 250,00	3 640,00	3 780,00
– plus: nove investicije / plus: new investments		1 000,00	1 200,00	1 000,00	1 400,00
– minus: amortizacija / minus: depreciation		750,00	810,00	860,00	930,00
– konačni *ROS* / final *RBA*	3 000,00	3 250,00	3 640,00	3 780,00	4 250,00
– prosječni *ROS* / mean *RBA*		3 125,00	3 445,00	3 710,00	4 015,00
Izračun ukupnog dopuštenog prihoda / Calculation of total authorized revenue					
– *OPEX* / *OPEX*	2 400,00	2 337,60	2 276,82	2 217,63	2 159,97
– amortizacija / depreciation	700,00	750,00	810,00	860,00	930,00
– povrat sredstava (stopa povrata **ROS*) / return on assets (return rate **RBA*)	210,00	218,75	241,15	259,70	281,05
– dozvoljeni prihod / allowed revenue	3 310,00	3 306,35	3 327,97	3 337,33	3 371,02

Nadalje, problem koji se javlja prilikom uspostave ciljane razine investicija je da ta razina mora odražavati učinkovitu razinu svake pojedine investicije koja se uključuje u regulatornu osnovicu sredstava. Da bi ovakav pristup bio moguć, regulatorno tijelo mora imati dovoljnu količinu informacija kao i dovoljan broj stručno osposobljenih ljudi, što se u praksi često pokazalo neostvarivim. Problem se dodatno komplicira budući da je primjena neke od metoda ravnanja prema mjerilu na *CAPEX* -a poprilično složen i težak postupak za primjenu, stoga ga regulatorna tijela izbjegavaju. Polazište za definiranje investicijskog plana

Furthermore, a problem that arises when establishing a target level of investment is that it must reflect the level of the performance of each individual investment that is included in the regulatory asset base. In order for this approach to work, the regulatory body must have a sufficient amount of information as well as a sufficient number of qualified personnel, which in practice is often unfeasible. The problem is additionally complicated because the application of some benchmarks to *CAPEX* is a fairly complex and difficult procedure and, therefore, regulatory bodies avoid it. The starting point for the definition of an investment plan is growth in consumption and the

je porast potrošnje te zamjena postojeće opreme. Ti čimbenici se razlikuju kada je riječ o različitim energetskim subjektima te mogu značajno utjecati na rezultate primjene metode ravnanja prema mjerilu. Nadalje, iako se radi o istovrsnim investicijama i istoj razini investicija, na rezultate metoda ravnanja prema mjerilu može utjecati i različito vrijeme započinjanja investicije i dinamika realizacije investicije, kao i utvrđena razina kvalitete opskrbe. Kvaliteta opskrbe kao funkcija regulacije do sada se često promatrala kao zasebna funkcija od funkcije regulacije cijena usluga, iako iskustva pokazuju da regulatorna tijela sve više nastoje razviti integrirane modele regulacije kojima bi se izbjegli svi dosadašnji rizici primjene pojedine metode regulacije [9]. Tablica 1 prikazuje pojednostavljeni primjer izračuna dozvoljenog, odnosno od strane regulatornog tijela odobrenog prihoda regulatornim pristupom slaganja blokova. Vrijednosti za dozvoljene investicije (na godišnjoj razini od 1 000 milijuna kuna), početni *OPEX* (2 400 milijuna kuna) i amortizaciju od prethodnih investicija (700 milijuna kuna) koje su pri tome korištene na razini su vrijednosti HEP ODS-a [12]. Od vrijednosti prikazanih u literaturi pod [12] oduzeti su troškovi koji po procjeni autora otpadaju na priključke. Od regulatornih parametara utvrđeni su:

– regulatorno razdoblje od 4 godine,
– faktor učinkovitosti za *OPEX* u vrijednosti 90 %, što godišnje iznosi smanjenje *OPEX*-a 2,6 %,
– linearna amortizacija na razdoblje od 20 godina,
– stopa povrata od 7 %.

Iz tablice 1 vidljivo je da, ukoliko se svi parametri definiraju kako je prethodno rečeno, dozvoljeni prihod subjekata koji obavljaju regulirane djelatnosti kroz 4 godine regulatornog razdoblja ostaje na skoro istoj razini. Regulatorna politika, odnosno ocjena potrebne razine povećanja učinkovitosti, može imati značajan utjecaj na regulirani prihod energetskog subjekta.

3.2 Regulatorni pristup ukupnih troškova

U regulatornom pristupu ukupnih troškova regulatorno tijelo kada utvrđuje razinu opravdane učinkovitosti ne razlikuje između *OPEX*-a i *CAPEX* -a, stoga faktor učinkovitosti *X* primjenjuje na sumu *OPEX*-a i *CAPEX*-a, odnosno na ukupan trošak (*TOTEX*) (tablica 2). U ovom slučaju regulatorno tijelo ne mora utvrđivati odvojeno opravdanu razinu investicija za sljedeće regulatorno razdoblje, već analizu provodi za ukupne troškove. U ovom pristupu regulatorno tijelo utvrđuje *X*-faktor na osnovi razine učinkovitosti iz prethodnih regulator-

replacement of existing equipment. These factors differ among various energy entities and can significantly influence the results of the benchmarking method applied. Moreover, although this concerns the same types of investments and the same level of investment, the results of the benchmarking method can be affected by differing times for the beginning of investments and the dynamics of the implementation of the investments, as well as the determined level of the quality of the supply. Up to now, the quality of the supply as a function of regulation has been frequently viewed as a function that is separate from the function of the regulation of the prices for services, although experience shows that the regulatory bodies are increasingly attempting to develop integrated models of regulation that avoid all the risks inherent in the individual regulatory methods that have been applied [9]. Table 1 shows a simplified example of the calculation of allowed revenue, i.e. revenue authorized by the regulatory body, using the building block approach. The values for allowed investments (at an annual level of 1 000 million kunas), the initial *OPEX* (2 400 million kunas) and depreciation from previous investments (700 million kunas) were previously used at the level of the HEP Distribution System Operator (HEP ODS d,o.o.) [12]. From the values presented in the literature under [12], expenditures have been deducted that the authors consider to be connection costs. The following regulatory parameters have been established:

– a regulatory period of 4 years,
– a efficiency factor for *OPEX* with a value of 90 %, which amounts to an annual reduction in *OPEX* of 2,6 %,
– linear depreciation during a period of 20 years,
– a rate of return of 7 %.

From Table 1, it is evident that, when all the parameters are defined as above, the allowed revenue of a entities performing regulated activities during a 4-year regulatory period remains at nearly the same level. Thus, regulatory policy, i.e. the assessment of the necessary level of increasing efficiency, can have a significant impact on the regulated revenue of an energy entity.

3.2 The regulatory approach of total expenditure

In the regulatory approach of total expenditure, when the regulatory body determines the level of justified efficiency it does not differentiate between *OPEX* and *CAPEX*, and therefore the efficiency factor *X* is applied to the sum of *OPEX* and *CAPEX*, i.e. to the total expenditure (*TOTEX*) (Table 2). Therefore, in this case the regulatory body does not need to determine the justified levels of investment separately for the subsequent regulatory period but

nih razdoblja. Ukoliko je energetski subjekt uspio u prethodnim razdobljima podići razinu učinkovitosti, koju će zadržati i u budućem razdoblju, *X*-faktor će biti niži. Naime, ovo je značajna razlika u regulatornom pristupu u odnosu na pristup slaganja blokova u kojem se prije svega ocjenjuje opravdanost razine predviđenih investicija u budućem razdoblju, ali ne i učinkovita razina *CAPEX* -a.

analyzes the total expenditure instead. In this approach, the regulatory body determines the *X*-factor on the basis of the level of efficiency from the previous regulatory periods. If the energy entity has successfully achieved the specified level of efficiency during the previous periods, which will also be maintained during the future period, the *X*-factor will be lower. This is a significant difference in the regulatory approach in comparison to the building block approach, in which the justification of the level of the anticipated investments in the future period is assessed but not the efficiency level at the *CAPEX* level.

Tablica 2 – Pojednostavljen primjer izračuna dozvoljenog prihoda primjenom regulatornog pristupa ukupnog troška
Table 2 – A simplified example of the calculation of the allowed revenue through the application of the total expenditure regulatory approach

Regulatorni parametri / Regulatory parameters	
Ukupni faktor učinkovitosti / Total efficiency factor	88 %
Godišnja stopa porasta učinkovitosti / Annual rate of efficiency growth	4 %

	Godina / Year			
	0.	1.	2.	3.
	(10^6 HRK)	(10^6 HRK)	(10^6 HRK)	(10^6 HRK)
OPEX / *OPEX*	2 400,00	2 304,00	2 212,00	2 123,00
Amortizacija / Depreciation	700,00	672,00	645,00	619,00
Povrat sredstava / Return on assets	300,00	288,00	276,00	265,00
Dozvoljeni prihod / Allowed revenue	3 400,00	3 264,00	3 133,00	3 008,00

U ovom pristupu problem ocjenjivanja opravdanosti razine investicija je na svojevrstan način izbjegnut. Nadalje, budući da ovaj pristup ne razlikuje *OPEX* i *CAPEX*, moguće je da energetski subjekt postigne odgovarajuću razinu učinkovitosti balansirajući između *OPEX*-a i *CAPEX* -a, odnosno između, u klasičnom smislu teorije produktivnosti, rada i kapitala. Kod regulatornog pristupa ukupnih troškova, regulatorno tijelo ne mora razvijati kriterije za ocjenjivanje prijedloga investicija, već analizira *TOTEX*, koji uključuje i investicije, te utvrđuje *X*-faktor na osnovi analize *TOTEX*-a.

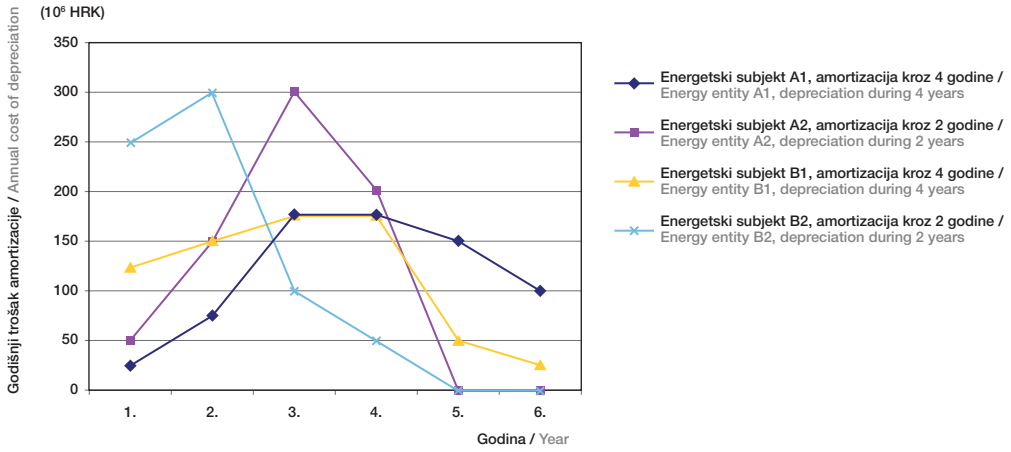
In this approach, the problem of assessing the justification of the level of investment is avoided in its own way. Furthermore, since this approach does not differentiate between *OPEX* and *CAPEX*, it is possible for an energy entity to achieve the suitable level of efficiency by balancing *OPEX* and *CAPEX* or labor and capital, in the classical sense of the theory of productivity. Therefore, in the regulatory approach of total expenditure, the regulatory body does not have to develop criteria for the assessment of an investment proposal but instead analyzes *TOTEX*, which also includes investment, and determines the *X*-factor on the basis of analysis of the *TOTEX*.

Tablica 3 – Pojednostavljen primjer utjecaja različite dinamike investiranja i amortizacijske politike na godišnji trošak amortizacije
Table 3 – A simplified example of the influence of various dynamics of investment and depreciation policies on the annual depreciation cost

Godina / Year	Investicije / Investments (10^6 HRK)	Godišnji trošak amortizacije po investicijama / Annual depreciation cost according to investments (10^6 HRK)			Troškovi amortizacije / Depreciation costs (10^6 HRK)
		1.	2.	3.	
Energetski subjekt A1, amortizacija kroz 4 godine / Energy Entity A1, depreciation during 4 years					
1.	100	25			25
2.	200	25	50		75
3.	400	25	50	100	175
4.		25	50	100	175
5.			50	100	150
6.				100	100
Ukupno / Total	700	100	200	400	700
Energetski subjekt A2, amortizacija kroz 2 godine / Energy Entity A2, depreciation during 2 years					
1.	100	50			50
2.	200	50	100		150
3.	400		100	200	300
4.				200	200
5.					0
6.					0
Ukupno / Total	700	100	200	400	700
Energetski subjekt B1, amortizacija kroz 4 godine / Energy Entity B1, depreciation during 4 years					
1.	500	125			125
2.	100	125	25		150
3.	100	125	25	25	175
4.		125	25	25	175
5.			25	25	50
6.				25	25
Ukupno / Total	700	100	200	400	700
Energetski subjekt B2, amortizacija kroz 2 godine / Energy Entity B2, depreciation during 2 years					
1.	500	250			250
2.	100	250	50		300
3.	100		50	50	100
4.				50	50
5.					0
6.					0
Ukupno / Total	700	500	100	100	700

Problem koji se javlja u regulatornom pristupu ukupnih troškova je vezan uz ročnost investicija. Naime, *CAPEX* se, uključujući amortizaciju i povrat sredstava, proteže kroz niz godina. Stoga bi prilikom primjene metoda ravnanja prema mjerilu analiza trebala u obzir uzeti razdoblje od nekoliko godina, a ne da se provodi na troškovima predviđenim samo za jednu godinu. Kao ilustrativni primjer dan je prikaz u kojem na *CAPEX* značajno utječe dinamika realizacije investicije, pri tome je prikazan samo trošak amortizacije, ali ne i povrat sredstava (tablica 3). Ukoliko bi se u analizi promatrala samo jedna godina, npr. druga godina realizacije investicije, energetski subjekt A1 bio bi učinkovitiji od energetskog subjekta B1, budući da su troškovi (75 milijuna kuna) energetskog subjekta A1 znatno niži od troškova (150 milijuna kuna) energetskog subjekta B1. Obrnuti slučaj bi se dogodio ukoliko bi se analiza provela u kasnijim godinama. Taj pojednostavljeni primjer naglašava važnost uključivanja dužeg razdoblja u analizu *TOTEX*-a metodom ravnanja prema mjerilu, što s praktične strane komplicira analizu budući da se mora analizirati veći skup podataka. Analiza se dodatno komplicira ukoliko se u obzir uzme različita računovodstvena praksa, što prikazuje tablica 3. Naime, energetski subjekti A1 i A2, odnosno B1 i B2, imaju istu dinamiku investiranja, međutim koriste različita amortizacijska razdoblja, stoga se njihov trošak amortizacije u pojedinoj godini značajno razlikuje (slika 3).

A problem that arises in the total expenditure regulatory approach is connected with investment maturity. *CAPEX*, including depreciation and return on assets, occurs over a series of years. Therefore, when applying the benchmarking method, analysis should take a period of several years into account and should not be performed for expenditures anticipated for only one year. An illustrative example is presented in which *CAPEX* significantly influences the dynamics of the investment, in which only the deprecation cost is shown and not the return on assets (Table 3). If only one year were considered in the analysis, for example the second year of the investment, Energy Entity A1 would be more efficient than Energy Entity B1, since the expenditures (75 million kunas) of Energy Entity A1 are significantly lower than the expenditures (150 million kunas) of Energy Entity B1. The reverse situation would occur if the analysis were performed in later years. This simplified example emphasizes the importance of including a longer period of analysis in the *TOTEX* benchmarking method, which from the practical aspect complicates analysis since it necessitates the analysis of a larger group of data. Analysis is further complicated insofar as various accounting practices are taken into account, as shown in Table 3. Energy Entities A1 and A2, i.e. B1 and B2, have the same dynamics of investment. However, they use different depreciation periods and, therefore, their depreciation costs in an individual year differ significantly (Figure 3).



Slika 3
Prikaz godišnjeg troška amortizacije za energetske subjekte čija je razina investiranja kumulativno jednaka, no godišnji trošak amortizacije se razlikuje

Figure 3
Annual depreciation costs for energy entities whose levels of investment are cumulatively equal but whose annual depreciation costs differ

Iako su prilikom razmatranja dva različita regulatorna pristupa korišteni poprilično jednostavni primjeri kroz koje su predočene različitosti u pristupima, primjeri odražavaju da se ulaganja trebaju razmatrati kroz duži vremenski rok. Na taj način može se provesti dosljedna regulatorna politika, ne samo u smislu utvrđivanja opravdane razine učinkovitosti, već i u smislu postizanja kontinuiranih

Although two fairly simple examples were used in analyzing the two different regulatory approaches, through which the differences in the approaches were presented, the examples demonstrate that investments must be analyzed over a long period of time. In this manner, it is possible to implement a consistent regulatory policy, not only in the sense of determining the justified level of efficiency but also

reguliranih cijena. Stabilna razina reguliranih cijena bez većih fluktuacija ne može se postići ukoliko su moguće česte promjene cijena usluga kao što je to slučaj s hrvatskim regulatornim okvirom, koji razmatra troškove subjekata koji obavljaju regulirane djelatnosti godinu za godinu. Naime, iako energetski subjekti nastoje, dugoročno gledajući, održavati istu razinu investicija na godišnjoj razini, njihovi troškovi su različiti od godine do godine, a time i razina dozvoljenog prihoda. Pitanje je na koji način će se HERA postaviti prema ovakvom problemu s kojim se susreću regulatorna tijela.

4 ULOGA HRVATSKE ENERGETSKE REGULATORNE AGENCIJE U DONOŠENJU PLANOVA RAZVOJA I IZGRADNJE

4.1 Zakonodavno rješenje

Hrvatski zakonodavac propisao je Zakonom o tržištu električne energije [8] da HEP OPS i HEP ODS donose planove razvoja i izgradnje za razdoblje od tri godine uz prethodnu suglasnost HERA-e na prijedlog planova. Međutim, zakonodavac ne prepoznaje nadležnost HERA-e u davanju suglasnosti za planove razvoja i izgradnje djelatnosti proizvodnje i opskrbe električnom energijom za tarifne kupce. Primjenjujući ovakvo zakonsko rješenje postavlja se pitanje na koji način će HERA razmatrati investicijske planove subjekata za proizvodnju i opskrbu električne energije i uključiti opravdana ulaganja u regulatornu osnovicu sredstava, budući da na njih temeljem Zakona [8] ne daje suglasnost, a primjenjuje istu metodu regulacije kao kod monopolnih djelatnosti – metoda priznatog troška. Ono što je potrebno napomenuti je da su tarifni sustavi, koje je donijela HERA, a ne zakonodavac, ulogu HERA-e u davanju suglasnosti na planove razvoja i izgradnje definirali kao identičnu za sve djelatnosti, iako to nije u skladu sa zakonskim odredbama. Nadalje, u tekstu svih tarifnih sustava navodi se da HERA daje suglasnost i na planove poslovanja svih djelatnosti iako pojam plan poslovanja Zakon [8] isto tako ne prepoznaje.

Takva razlika nadležnosti između zakonskih odredaba koje je utvrdio Hrvatski sabor i odredaba koje proizlaze iz podzakonskih akata koje je donijelo samo tijelo za sebe, u ovom slučaju HERA, potencira činjenicu da se prije donošenja drugog seta energetskih zakona nije detaljno analizirala uloga i pozicija HERA-e kao regulatornog tijela u energetskom sektoru RH kao niti regulacija energetskih djelatnosti kao disciplina sa svojim značajkama.

in the sense of achieving continuously regulated prices. A stable level of regulated prices without wide fluctuations cannot be achieved if it is possible to change the prices for services frequently, as is the case with the Croatian regulatory framework, which considers the expenditures of the entities performing regulated activities from year to year. Although the energy entities attempt to maintain the same level of investment on the annual level, viewed over the long-term, their costs differ from year to year and therefore the level of allowed revenue also differs. It is a question how the CERA will address this problem.

4 THE ROLE OF THE CROATIAN ENERGY REGULATORY AGENCY IN THE ADOPTION OF DEVELOPMENT AND CONSTRUCTION PLANS

4.1 Legislative solution

Croatian legislation stipulates that pursuant to the Electricity Market Act [8], the transmission system operator and the distribution system operator shall adopt development and construction plans for periods of three years, pending prior approval of the proposed plans by the CERA. However, the legislation does not recognize the authority of the CERA in issuing approval for the development and construction plans for the activities of the production and supply of electrical energy for tariff customers. Applying such a legal solution, the question arises concerning how the CERA will analyze the investment plans of the entities for the generation and supply of electrical energy and include the justified investment in the regulatory asset base, since according to the Law [8] it does not issue approval and applies the same method of regulation as for monopoly activities – the regulation of the rate of return. It should be mentioned that in the tariff systems which the CERA has adopted, and not the legislator, the roles of the CERA in issuing approval for development and construction plans are defined as identical for all activities, although this is not pursuant to the legal provisions. Furthermore, in the text of all the tariff systems, it is stated that the CERA also issues approval for the business plans of all activities, although the Law does not recognize the concept of a business plan [8].

Such differences in the specified authority between the legal provisions established by the Croatian Parliament and the provisions ensuing from the bylaws that the agency has issued for itself, in this case the CERA, emphasize the fact that the role

Naime, bitno je napomenuti da je HERA osnovana od strane RH kao javna ustanova što znači da joj je temeljem Zakona o ustanovama moguće dodijeliti javne ovlasti, odnosno prenijeti (delegirati) nadležnosti s državnog tijela [13]. Podjeljivanje javnih ovlasti uvijek otvara složeno pitanje smanjuje li se takvim ponašanjem opseg autoritativnog istupa države ili se pak ukupnost autoritativnog postupanja, a to znači i mogućnost uporabe prisile, proširuje. Bez obzira kojoj se konstataciji priklonili, mora se respektirati činjenica da je Zakon o ustanovama propisao da se zakonom ili na temelju zakona donesenom posebnom odlukom može javnoj ustanovi povjeriti da u sklopu djelatnosti radi koje je osnovana općim aktima uređuje određene odnose, da rješava u pojedinim upravnim stvarima o pravima, obvezama i odgovornosti fizičkih i pravnih osoba te da obavlja druge javne ovlasti.

Karakteristično je, također, da je Zakon o sustavu državne uprave, uz svoj temeljni pristup da poslove državne uprave obavljaju tijela državne uprave, propisao da se posebnim zakonom mogu određeni poslovi državne uprave prenijeti i pravnim osobama koje na temelju zakona imaju javne ovlasti [13]. Na temelju ovlasti iz posebnog zakona javne ustanove mogu obavljati najrazličitije poslove iz nadležnosti državnih tijela (posebno tijela državne uprave). Kad se razmotre odredbe Zakona o ustanovama, onda je vidljivo da je Zakon u složenom problemu podjeljivanja javnih ovlasti definirao dvoje:

– pravnu osnovu (izvor) javnih ovlasti – to su zakon, odnosno na temelju zakona donesena odluka predstavničkog tijela jedinica lokalne, područne samouprave,
– sadržaj javnih ovlasti – to je pravo da se općim aktima uređuju određeni odnosi, da se rješava u pojedinačnim upravnim stvarima o pravima, obvezama i odgovornosti određenih subjekata kao i eventualno pravo na obavljanje drugih javnih ovlasti.

Povjeravanje javnih ovlasti javnoj ustanovi znači za nju i određene dužnosti. U djelovanju javne ustanove ostvarivanje njezine posebne uloge (posebnog statusa) realizira se korištenjem javnih ovlasti i izvršavanjem dužnosti koje su joj u svezi s time nametnute. Javna ustanova mora obavljati javne ovlasti samo pod uvjetima, na način i u postupku koji je određen zakonom. Dakle, nemoguće joj je podzakonskim aktima dodjeljivati nadležnosti koje joj zakonski nisu pripisane kao što je to slučaj s pojedinim podzakonskim aktima proizašlim iz energetskih zakona.

and position of the CERA as a regulatory body within the energy sector of the Republic of Croatia and the regulation of energy activities as a discipline with specific characteristics had not been analyzed in detail prior to the adoption of the second set of energy acts. It is important to mention that the CERA was established by the Republic of Croatia as a public institution, which means that pursuant to the Institution Act it can be assigned public authority, i.e. delegated authority from the state entity [13]. The assignment of public authority always raises the complex question of whether the authority of the state is thereby diminished or whether the total authority, which means the option of the use of force, is expanded. In any case, it is necessary to respect the fact that the Institute Act stipulates that according to the law or pursuant to a law adopted by a special decision, a public institution may be entrusted, within the framework of the activities for which it has been established by enactments, to determine specific relationships; to resolve individual administrative issues about the rights, obligations and responsibilities of natural and legal persons; and to exercise other public authority.

It is also characteristic that the State Administrative System Act, in addition to the fundamental approach that the duties of state administration are to be performed by state administrative bodies, stipulates that pursuant to special legislation it is possible for specific duties of the state administration to be transferred to legal persons who have public authority pursuant to the law [13]. Therefore, based upon authorization from special legislation, public institutions are allowed to perform the most varied activities from the areas of the authority of the state bodies (especially state administrative bodies). When the provisions of the Institution Act are examined, it is evident that the Act has defined two issues within the complex problem of the assignment of public authority:

– the legal basis (source) of public authority – i.e. a ruling adopted pursuant to the law by the representative agency of the units of local and regional self-management,
– the content of public authority – i.e. the right to use enactments to determine relationships, to resolve issues concerning the rights, obligations and responsibilities of specific entities in individual administrative matters, as well as the eventual right to exercise other public authority.

The entrusting of public authority to a public institution means that specific duties are entrusted to it. In the operations of a public institution, it exercises its specific role (special status) through the exercise of public authority and the performance of duties that

4.2 Kriteriji za davanje suglasnosti na planove razvoja i izgradnje reguliranih energetskih subjekata

Energetski subjekti na koje se doneseni tarifni sustavi odnose nisu još dostavili HERA-i planove poslovanja, razvoja i izgradnje (koliko je poznato autorima) radi davanja suglasnosti. Rok za dostavu planova je 30. studenoga što proizlazi iz odredbi tarifnih sustava. Stoga se u ovom trenutku ne može razmatrati HERA-in odnos prema davanju suglasnosti na planove razvoja i izgradnje te koliko duboko je HERA spremna analizirati kriterije za odabir pojedinih investicija kao i da li će ući u analizu tehničkih rješenja ili će se povesti samo za odlukama energetskih subjekata kao instanci meritornih za definiranje kriterija od HERA-e. Isto tako ne može se razmatrati na koji način će HERA pristupiti utvrđivanju opravdanih, može se reći i učinkovitih, razina pojedinih troškova, te koje investicije će priznati u regulatornoj osnovici sredstava.

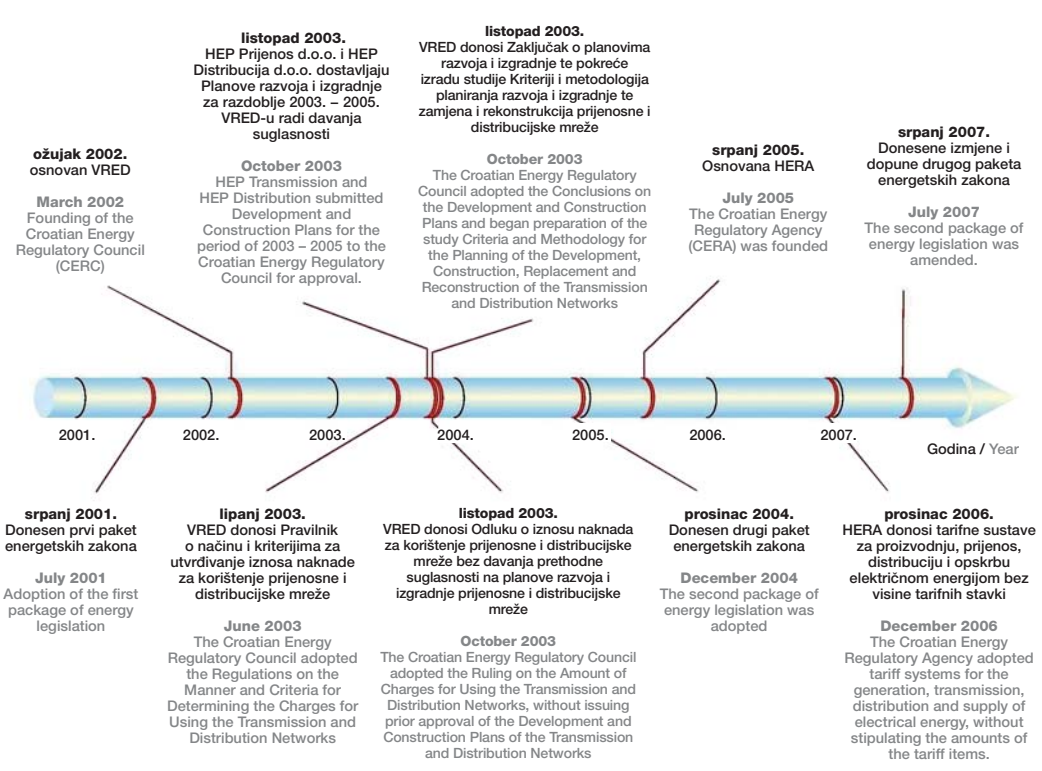
are thereby assigned to it. A public institution must exercise public authority only under the conditions, in such a manner and according to the procedure stipulated for it according to law. Therefore, it is not possible for enactments to assign authorization not stipulated by law, such as in the case of individual enactments resulting from energy legislation.

4.2 Criteria for issuing approval for the development and construction plans of entities performing regulated activities

The energy subjects to which the adopted tariff systems refer have still not submitted their plans for operations, development and construction (to the best of the authors' knowledge) to the CERA for approval. The deadline for the submission of the plans is November 30, according to the provisions of the tariff systems. Therefore, at this moment it is not possible to discuss the CERA's attitude toward issuing approval for development and construction plans and how deeply the CERA is prepared to analyze the criteria for choosing individual investments, as well as whether it will enter into analysis of the technical solutions itself or rely solely upon the decisions of the energy entities as sufficiently authoritative for defining its criteria. Similarly, it is not possible to discuss how the CERA will approach the determination of justified, it can be said effective, levels of individual expenditures, and which investments it will recognize in the regulatory asset base.

Slika 4
Vremenski tijek donošenja propisa koji su vezani uz ulogu regulatornog tijela (VRED/HERA) u davanju suglasnosti na planove razvoja i izgradnje prijenosne i distribucijske mreže

Figure 4
Time line of regulations adopted in connection with the role oh the regulatory body (CERC/CERA) in approving the development and construction plans of the transmission and distribution networks



4.2.1 Iskustva Vijeća za regulaciju energetskih djelatnosti

Zakon o tržištu električne energije iz 2001. godine također je definirao da tadašnje regulatorno tijelo, Vijeće za regulaciju energetskih djelatnosti (VRED) [14], daje prethodnu suglasnost na plan razvoja i izgradnje prijenosne i distribucijske mreže. Hrvatski nezavisni operator sustava i tržišta d.o.o. (HNOSIT d.o.o.) i HEP Prijenos d.o.o. u 2003. godini proslijedili su Plan razvoja i izgradnje prijenosne mreže za razdoblje od 2003. do 2005. godine, odnosno HEP Distribucija d.o.o. Plan razvoja i izgradnje distribucijske mreže za razdoblje od 2003. do 2005. godine, VRED-u radi davanja prethodne suglasnosti. Budući da prije toga VRED nije zauzeo stav prema načinu na koji će pristupiti davanju prethodne suglasnosti na planove, VRED je pokrenuo izradu Kriterija i metodologija planiranja razvoja i izgradnje te zamjena i rekonstrukcija prijenosne i distribucijske mreže kojima se nastojalo na razvidan, jasan i dosljedan način utvrditi polazno stajalište regulatornog tijela visá-vis strategije razvoja prijenosne i distribucijske mreže kao i kriterija za rekonstrukciju postojećih objekata. Imajući u vidu da rad regulatornog tijela treba počivati na načelima razvidnosti, dosljednosti i stručnosti, VRED je zauzeo stajalište da je energetskom subjektu potrebno jasno definirati što se od njega očekuje tako da i buduća stajališta, odnosno odluke regulatornog tijela budu na svojevrstan način predvidljive. Tim više ukoliko se radi o kapitalno intenzivnim djelatnostima za čija ulaganja su potrebne dugoročnije analize kao i srednjoročan, odnosno dugoročan povrat investicijskih sredstava, koji se ujedno odražava i u iznosu tarifnih stavki.

Ilustrativni primjer VRED-ovog Zaključka iz 2003. godine koje je bilo ishodište za izradu Kriterija i metodologija planiranja razvoja i izgradnje te zamjena i rekonstrukcija prijenosne mreže, odnosno pokretanje dorade dostavljenog Plana razvoja i izgradnje prijenosne mreže za razdoblje od 2003. do 2005. godine, je sljedeći [15]:

I. Plan je potrebno donijeti u skladu sa Strategijom energetskog razvitka i Programom provedbe Strategije energetskog razvitka,

II. Da bi se provela procedura ocjene Plana i davanja suglasnosti na prijedlog Plana propisane člankom 12. stavak 1. Zakona o tržištu električne energije [14] potrebno je ispuniti sljedeće uvjete:

   1) definirati kriterije i metodologiju planiranja razvoja prijenosne mreže kao i metodologiju plana zamjene i rekonstrukcije koje će uključivati i ekonomske kriterije planiranja,

4.2.1 Experience of the Croatian Energy Regulatory Council

The Electricity Market Act of 2001 also stipulated that the regulatory body at the time, the Croatian Energy Regulatory Council – CERC (Vijeće za regulaciju energetskih djelatnosti – VRED) [14], would issue prior approval for the development and construction plans of the transmission and distribution networks. In the year 2003, the Croatian Independent System and Market Operator – CISMO (Hrvatski nezavisni operator sustava i tržišta d.o.o. – HNOSIT d.o.o.) and HEP Transmission (HEP Prijenos d.o.o.) forwarded the Development and Construction Plan for the Transmission Network for the Period of 2003 to 2005, and HEP Distribution (HEP Distribucija d.o.o.) forwarded the Development and Construction Plan for the Distribution Network for the Period of 2003 to 2005 to the Croatian Energy Regulatory Council – CERC in order to obtain prior approval. Since the CERC had not previously taken a position regarding the manner in which it would approach the issue of prior approval for plans, it started work on the Criteria and Methodology for Planning the Development, Construction, Replacement and Reconstruction of Transmission and Distribution Networks, by which it attempted to determine the starting position of the regulatory body vis-à-vis the strategic development of the transmission and distribution networks as well as the criteria for the reconstruction of the existing facilities in a transparent, clear and consistent manner. Bearing in mind that the work of the regulatory body should be based upon the principles of transparency, consistency and expertise, the CERC assumed the position that it is necessary to provide a clear definition to the energy entity concerning what is expected of it so that the future positions, i.e. decisions, of the regulatory body would be predictable. This is even more important regarding investments in capital intensive activities, which would require long-term as well as medium-term analysis, i.e. the long-term return of invested assets, as also reflected in the amount of the tariff items.

An illustrative example of the CERC's conclusion from the year 2003, which was the starting point for devising the Criteria and Methodologies for Planning the Development, Construction, Replacement and Reconstruction of the Transmission Network, as well as preparing the final modifications of the submitted Development and Construction Plan for the Transmission Network for the Period from 2003 to 2005, is as follows [15]:

I. The plan must be adopted, pursuant to the Strategy for Energy Development and the Program for the Implementation of the Strategy for Energy Development,

što je u skladu s prijedlogom Mrežnih pravila hrvatskog elektroenergetskog sustava (koja u trenutku donošenja Zaključka nisu bila usvojena), a u kojima se takav kriterij jednoznačno ne definira,
2) planirati izgradnju objekata te zamjenu i rekonstrukcije objekata na način da predviđeni objekti zadovoljavaju definirane kriterije,
3) iskazati troškove HNOSIT-a d.o.o. odvojeno od planova HEP Prijenos d.o.o. te ih procijeniti u skladu s ulogom koju HNOSIT d.o.o. preuzima prema Zakonu o tržištu električne energije,

III. U daljnjim koracima potrebno je započeti sa sljedećim radnjama:

1) definirati zahtjeve koji se postavljaju na prijenosnu mrežu prvenstveno u smislu kvalitete električne energije isporučene izravnim i distributivnim kupcima (frekvencija, napon, raspoloživost mreže), te s obzirom na strateška pitanja razvoja mreže (samodostatnost, tretman susjednih mreža u planiranju, tranziti i uloga mreže u tržištu električne energije, izgradnja novih interkonekcija, modernizacija sustava, kriteriji izgradnje GIS postrojenja i dr.),
2) formirati jedinstvenu bazu podataka nužnu za planiranje razvoja mreže te definirati neke osnovne ulazne podatke bitne kod planiranja poput jediničnih troškova neisporučene električne energije, jediničnih cijena visokonaponske opreme, diskontne stope za potrebe planiranja i dr.,
3) za svaki objekt predviđen za izgradnju ili zamjenu i rekonstrukciju izraditi tehnoekonomski elaborat iz kojeg bi proizašlo da li razmatrani objekt zadovoljava kriterije planiranja definirane Mrežnim pravilima i ostalim pripadnim dokumentima.

Zaključak sličnog karaktera VRED je donio i prilikom ocjene Plana razvoja i izgradnje distribucijske mreže za razdoblje od 2003. do 2005. godine. Na istoj sjednici VRED-a na kojoj je VRED donio navedene Zaključke, VRED je donio Odluku o iznosu naknada za korištenje prijenosne i distribucijske mreže [16] temeljem Zakona o tržištu električne energije iz 2001. godine [14]. Ta Odluka još uvijek je na snazi budući da je tarifni sustavi koje je donijela HERA nisu stavili van snage. Slika 4 prikazuje tijek donošenja relevantnih propisa i odluka koji se odnose na ulogu hrvatskog regulatornog tijela HERA-e, odnosno VRED-a, u donošenju planova razvoja i izgradnje prijenosne i distribucijske mreže.

II. In order to implement the procedures for the evaluation of the Plan and the issue of approval for the proposed Plan stipulated in Article 12, Paragraph 1 of the Electricity Market Act [14], the following prerequisites must be met:

1) to define the criteria and methodology for the planning of the development of the transmission network as well as the methodology for the replacement and reconstruction plan, which will include the economic criteria for planning, pursuant to the proposed Grid Code of the Croatian Electrical Energy System (which at the time of the adoption of the conclusion had still not been adopted), and in which such criteria are not defined unambiguously,
2) to plan the construction of facilities and the replacement and reconstruction of facilities in such a manner that the facilities meet the defined criteria,
3) to present the expenditures of the Croatian Independent System and Market Operator – CISMO (HNOSIT d.o.o.) separately from the plans of HEP Transmission (HEP – Prijenos d.o.o.) and to evaluate them according to the role that the CISMO assumes according to the Electricity Market Act,

III. In subsequent steps, it is necessary to begin the following activities:

1) to define the requirements that are established for the transmission network, primarily in the sense of the quality of the electrical energy to direct customers and customers connected to the distribution network (frequency, voltage and network availability), and regarding the strategic question of network development (self-sufficiency, the treatment of neighboring networks in planning; transit and the role of networks in the electrical energy market, the construction of new interconnections, the modernization of the system, the criteria for the construction of Geographical Information System [GIS] facilities etc.),
2) to establish a unified database necessary for the planning of network development and to define some basic input data required for planning, such as the unit prices of undelivered electrical energy, unit prices of high-voltage equipment, discount rates for the necessary planning etc.,
3) for each facility planned for construction, replacement or reconstruction, to prepare a technical/economic study which would show whether said facility meets the planning criteria defined by the Grid Code and other relevant documents.

4.2.2 Iskustva Hrvatske energetske regulatorne agencije

HERA za sada nije pristupila izradi sličnih kriterija ili stajališta o planovima razvoja i izgradnje HEP OPS-a i HEP ODS-a, niti je utvrdila svoj stav prema dubini analize (prema javno dostupnim informacijama). Nepostojanje unaprijed definiranih kriterija za davanje suglasnosti na planove moglo bi dodatno odgoditi donošenje iznosa tarifnih stavki za pojedine djelatnosti, budući da je davanje suglasnosti na planove preduvjet je za davanje mišljenja na prijedlog iznosa tarifnih stavki koje energetski subjekt dostavlja Ministarstvu gospodarstva, rada i poduzetništva (MINGORP), a MINGORP prosljeđuje HERA-i na mišljenje.

4.3 Stavovi Hrvatske energetske regulatorne agencije u rješavanju preduvjeta za primjenu metode priznatih troškova

Iz prethodno iznesene rasprave vezano uz regulatorni pristup gradnje blokova i regulatorni pristup ukupnih troškova vidljivo je da je vrlo značajna uloga regulatornoga tijela u utvrđivanju opravdane razine pojedinih regulatornih parametara. Utvrđena metoda priznatih troškova u donesenim tarifnim sustavima prepoznaje regulatorne parametre koji su ranije analizirani kao što su to – regulatorna osnovica sredstava, amortizacija i stopa povrata u vidu ponderiranog prosječnog troška kapitala. Tarifni sustavi definiraju da mišljenje o priznatim troškovima poslovanja ($OPEX$) i stopi povrata kapitala daje HERA, dok se kapitalni troškovi ($CAPEX$) – regulirana osnovica sredstava, tj. prinos od regulirane imovine i amortizacija utvrđuju na osnovi planova razvoja i izgradnje na koje HERA daje suglasnost. Utvrđena metoda regulacije ne poznaje faktor učinkovitosti kao regulatorni parametar metode.

Osim stava o dubini uplitanja u elemente planova poslovanja, razvoja i izgradnje, HERA bi trebala po mišljenju autora prilikom postupka davanja mišljenja na prijedlog iznosa tarifnih stavki po djelatnostima, između ostalog, svoj stav zauzeti i o sljedećem:

- je li obavljen razvidan i dosljedan nadzor nad razdvajanjem djelatnosti kako u tehničkom i tako i financijskom pogledu,
- opravdanoj razini stope povrata za svaku pojedinu djelatnost,
- koje investicije uključiti u regulatornu osnovicu sredstava, što uključuje i tumačenje pojedinih pojmova iz tarifnih sustava, kao što je npr. pojam nove investicije koje su sufinancirane, a uključene su u regulatornu osnovicu sredstava,
- opravdanoj razini troškova poslovanja ($OPEX$),
- i slično.

The CERC also adopted a conclusion of a similar character in the evaluation of the Development and Construction Plan for the Distribution Network for the Period from 2003 to 2005. At the same CERC session, at which the CERC adopted the previously mentioned conclusions, it also adopted the Decision on Fees for Using the Transmission and Distribution Networks [16], pursuant to the Electricity Market Act of 2001 [14]. This Decision is still in force, since the tariff systems that the CERA adopted are still in force. Figure 4 shows the course of the adoption of the relevant regulations and decisions that refer to the role of the Croatian Energy Regulatory Agency – CERA or the Croatian Energy Regulatory Council – CERC, in the adoption of development and construction plans for the transmission and distribution networks.

4.2.2 Experience of the Croatian Energy Regulatory Agency

For the present, the CERA has not started to develop similar criteria or positions on the development and construction plans of the transmission system operator and the distribution system operator, and has not defined its position toward in-depth analysis. The lack of previously defined criteria for issuing approval for plans could additionally postpone the adoption of the amounts of the tariff items for individual activities, since the issuing of approval for the plans is a prerequisite for issuing an opinion on the proposed amounts of the tariff items which an energy entity submits to the Ministry of the Economy, Labor and Entrepreneurship, and which the Ministry forwards to the CERA for an opinion.

4.3 Positions of the Croatian Energy Regulatory Agency in resolving the prerequisites for the application of the rate of return (RoR) method

From the previous discussion of the building block regulatory approach and the total expenditure regulatory approach, it is evident that the regulatory body has a highly significant role in the determination of the justified levels of individual regulatory parameters. The rate of return method in the adopted tariff systems recognizes the regulatory parameters that were analyzed previously, such as the regulatory asset base (RAB), depreciation and the rate of return regarding the weighted average cost of capital ($WACC$). The tariff systems stipulate that an opinion on the recognized operating expenditure ($OPEX$) and the rate of return on capital shall be issued by the CERA, while the capital expenditure ($CAPEX$) – the regulatory asset base, i.e. the revenue from regulated assets and depreciation shall be determined on the basis of the development and construction plans which shall be approved by the CERA. The established method of regulation does not recognize the efficiency factor as a regulatory parameter.

Jedan od bitnih preduvjeta za mogućnost uvođenja metode regulacije kao što je to metoda priznatih troškova je provođenje razvidnog i dosljednog razdvajanja djelatnosti u punom smislu – od razdvajanja imovine, osoblja do pridjeljivanja potraživanja po kreditima i sl. Jedan od problema je na koji način će HERA pristupiti davanju mišljenja na iznos tarifnih stavki za opskrbu električnom energijom ukoliko se zna da se nisu razdvojile djelatnosti distribucije i opskrbe električnom energijom te da HEP Operator distribucijskog sustava d.o.o. obavlja uz djelatnost distribucije i opskrbu električnom energijom, iako je zakonski rok za razdvajanje istih istekao (1. srpnja 2007. godine) [8].

Isti problem preslikava se i na utvrđivanje opravdane razine *OPEX*-a koji bi se trebao utvrditi na razini koja odražava učinkovitost poslovanja ili barem bi se ta razina tijekom godina trebala približiti učinkovitoj razini koja bi vrijedila da se djelatnost izloži tržišnom natjecanju i rizicima. Između ostalog, postavlja se pitanje što predstavlja *OPEX* u slučaju HEP Opskrbe d.o.o. koja obavlja djelatnost opskrbe samo za povlaštene kupce. Znači, taj trošak tarifni kupci uopće ne bi trebali snositi. Sa stajališta regulatornog tijela koje, uz zaštitu održivog poslovanja energetskog subjekta i omogućavanje nenarušenog tržišnog natjecanja, ima zadatak zaštite kupaca, bilo bi neopravdano priznati taj trošak kroz primjenu metode priznatih troškova i davanja pozitivnog mišljenja na prijedlog iznosa tarifnih stavki koji uključuju trenutačni trošak alociran unutar HEP Grupe na HEP Opskrbu d.o.o.

Nadalje, provedba razvidnog razdvajanja ima utjecaja i na *CAPEX* u svim djelatnostima. Naime, za svaku djelatnost HERA bi trebala utvrditi opravdanu razinu početne regulatorne osnovice sredstava, zatim amortizacijsku politiku i sredstva koja se tijekom regulatornog razdoblja dodjeljuju regulatornoj osnovi sredstva na koju se primjenjuje stopa povrata na kapital. Stopu koja se primjenjuje na srednju vrijednost regulatorne osnovice sredstava utvrđuje HERA na prijedlog energetskog subjekta. Problem koji se ovdje javlja je i utvrđivanje opravdane stope povrata, budući da se radi o djelatnostima koje su po svom karakteru različite – monopolne i tržišne, iz čega proizlaze različiti stupnjevi rizika u poslovanju kao i različiti uvjeti financiranja. Naime, iz opisa metode navedene u tarifnim sustavima nije razvidno koja će se stopa primijeniti i hoće li se ona razlikovati po djelatnostima, iako se radi o istom vertikalno organiziranom poduzeću HEP Grupi. Utvrđivanje stope povrata zahtijeva provođenje detaljnih analiza koje HERA još nije provela. Da bi HERA-in rad dobio na vjerodostojnosti i stručnosti potrebno je da HERA pravodobno, prije donošenje odluka i pod-

In addition to the position on the depth of involvement in the elements of the business, development and construction plans, it is the authors' opinion that the CERA should take a position on the following matters when issuing opinions on the proposed tariff amounts according to activities:

- whether transparent and consistent supervision has been performed over the unbundling of the technical and financial activities,
- the justified level of the rate of return for each individual activity,
- which investments should be included in the regulatory asset base, together with the interpretation of individual concepts from the tariff systems, such as, for example the concept of new investments that are co-financed and included in the regulatory asset base,
- the justified level of operating expenditures (*OPEX*),
- etc.

One of the essential prerequisites for the possible introduction of regulatory methods such as the rate of return method is the transparent and consistent unbundling of activities in the full sense – including the unbundling of assets, personnel, claims on loans etc. One of the problems is how the CERA will approach the issuing of opinions on the amount of tariff items for the supply of electrical energy if it knows that the activities of the distribution and supply of electrical energy have still not been unbundled and that the HEP Distribution System Operator performs the activity of the supply of electrical energy in addition to the activity of the distribution of electrical energy.

The same problem is also reflected in the determination of the justified level of *OPEX*, which should be determined at a level that reflects the efficiency of operations or at least this level during the year should approach a efficiency level that would be valid if the activity were subject to market competition and risks. Thus, among other things, the question is posed what *OPEX* represents in the case of HEP Supply (HEP Opskrba d.o.o.), which only performs the activity of supply for eligible customers. This means that tariff customers should not have to cover this expenditure. From the standpoint of the regulatory body which, in addition to safeguarding the sustainable operations of the energy entity and facilitating inviolable market competition, also has the task of protecting the customers, it would be unjustified to recognize this expenditure through the application of the rate of return method and issue a positive opinion on the proposed amounts of tariff items, which include the current expenditure allocated within the HEP Group for HEP Supply.

zakonskih akata, provede sve nužne analize koje u slučaju utvrđivanja metoda za izračun cijena usluga ponekad (po iskustvima drugih regulatornih tijela) traju i po 18 mjeseci [6].

Osim stope povrata, kod *CAPEX* -a, dilemu predstavlja tumačenje i drugih pojmova koje prepoznaje tarifni sustav, a isti nisu u dovoljnoj mjeri pojašnjeni, npr. vrijednost novih investicija koje su sufinancirane. Pretpostavlja se da ih sufinancira kupac. Trošak investicije koji je financirao kupac ne bi trebao ući u regulatornu osnovicu sredstava niti biti priznat kroz trošak amortizacije energetskog subjekta, budući da bi na taj način kupac plaćao investiciju dva puta – kroz trošak investicije i kroz tarifu. Upitno je na koji način će HERA pristupiti rješavanju problema investicija koje sufinancira kupac.

Navedeni primjeri pitanja na koje HERA mora odgovoriti prilikom davanja mišljenja na prijedlog iznosa tarifa i provođenja regulatorne politike samo su ilustrativni. Primjena ekonomske regulacije seže puno dublje i kompleksnija je od navedenih primjera te zahtijeva detaljne elaboracije i analize. No, i argumentirani stavovi koje HERA treba zauzeti prilikom rješavanja navedenih dilema iz opisanog primjera mogu značajno utjecati na razinu tarifnih stavki pojedinih djelatnosti te na raspodjelu troškova i prihoda između djelatnosti.

Furthermore, transparent division also has an impact on *CAPEX* in all activities. For each activity, the CERA would have to determine the justified level of the initial regulatory asset base, the depreciation policy and the assets that would be allocated to the regulatory asset base during the regulatory period, to which the rate of return on capital would be applied. The rate that is applied to the mean value of the regulatory asset base is determined by the CERA at the proposal of the energy entity. A problem that occurs here is the determination of the justified rate of return, since this concerns activities that differ in nature – monopolistic and market, from which there are different degrees of risks in operations as well as different conditions of financing. From the description of the methods stated in the tariff systems, it is not clear which rate will be applied and whether the rates will differ according to activities, although they concern the same vertically organized enterprise in the HEP Group. Determination of the rate of return requires detailed analysis. In order for the CERA's work to obtain credibility and professionalism, prior to adopting decisions and regulations the CERA must first perform all the necessary analyses in a timely manner, which in the case of the determination of the methods for the calculation of the prices for services sometimes (according to the experiences of other regulatory bodies) requires as long as 18 months [6].

In addition to the rate of return, regarding *CAPEX* there is a dilemma posed by the interpretation of other concepts that the tariff system recognizes, which are not explained to a sufficient extent, such as the value of new investments that are co-financed. It is assumed that they are co-financed by the customer. An investment expenditure that a customer has financed should not enter the regulatory asset base or be recognized as a depreciation expenditure of the energy entity. Otherwise, the customer would have to pay for the investment twice – through the investment expenditure and through the tariff. Therefore, it is a question how the CERA will approach the solution of the problem of investments that are co-financed by the customer.

The cited examples of questions to which the CERA must respond when issuing an opinion on the proposed amounts of tariffs and the implementation of regulatory policies are merely illustrative. The application of economic regulations ranges far deeper, is much more complex than the examples presented and requires more detailed elaboration and analysis. However, the argued positions that the CERA should assume when resolving the cited dilemmas from the example described could significantly affect the level of the tariff items for individual activities and the allocation of expenditures and revenues among the activities.

5 ZAKLJUČAK

U utvrđivanju reguliranih cijena primjenjuju se različite metode ekonomske regulacije i to prvenstveno u djelatnostima koje su po svom karakteru monopolne, znači prijenosu i distribuciji električne energije, a ne u djelatnostima proizvodnje i opskrbe koje su po svom karakteru tržišne djelatnosti. Sukladno tome, regulatorno tijelo u većini analiziranih država donosi ili daje suglasnost na planove razvoja i izgradnje monopolnih djelatnosti kao preduvjet za utvrđivanje cijena reguliranih usluga. Zakonska nadležnost regulatornog tijela da donosi ili daje suglasnost na planove razvoja i izgradnje energetskih subjekata u načelu ne daje odgovor koliko duboko je pravo regulatornog tijela da zadire u planove razvoja i izgradnje energetskih subjekata. Stoga se vrlo često u početku uvođenja regulatorne prakse postavlja pitanje koliko meritorno može biti regulatorno tijelo prilikom ulaska u rasprave o pojedinim koncepcijskim rješenjima, odnosno o pojedinim tehničkim pitanjima. Praksa u regulatornim tijelima u EU, odnosno članicama ERRA-e, s dužom regulatornom praksom od HERA-e pokazala je da su koncepcijska rješenja i kriteriji za izgradnju objekata u načelu odluka energetskog subjekta, dok regulatorno tijelo odobrava poslovne planove uključujući financijsko pokrivanje investicijskog plana. Paralelno odobravanju poslovnih planova, regulatorna tijela utvrđuju opravdanu razinu učinkovitosti te razinu kvalitete opskrbe kako se smanjenjem troškova ne bi smanjila i kvaliteta opskrbe.

Regulatorna politika može imati značajan utjecaj na budući prihod energetskog subjekta kroz utvrđivanje regulatorne osnovice sredstava u koju ulaze odobrena ulaganja te kroz utvrđeni faktor učinkovitosti. Odobrena razina ulaganja ima značajan odraz na visinu regulirane cijene koja proizlazi iz primijenjene regulatorne metode. Isto tako, ukoliko se jednom investicija prizna u *CAPEX*-u, a ne realizira se tijekom regulatornog razdoblja za koje je odobrena, nije opravdano opet uključiti je u *CAPEX* u sljedećem regulatornom razdoblju. Ako se radi o kratkom regulatornom razdoblju, kao što je to npr. jedna godina kako je predviđeno tarifnim sustavima koje je donijela HERA, postavlja se pitanje na koji način će regulatorno tijelo pratiti realizaciju investicije i njeno uključivanje u *CAPEX*. Naime, regulatorni pristupi analizirani u ovom članku pokazali su da je prilikom utvrđivanja *CAPEX*-a, odnosno razmatranja učinkovitosti pojedinog energetskog subjekta potrebno analizirati troškove kroz duže vremensko razdoblje. Takvom analizom, odnosno primjenom metoda ravnanja po mjerilu na složenijem skupu podataka, osigurala bi se vjerodostojnost i razvidnost postupanja regu-

5 CONCLUSION

In the determination of regulated prices, various methods of economic regulation are applied, primarily to activities that are by their nature monopolistic, i.e. the transmission and distribution of electrical energy, and not to the activities of generation and supply, which are by their nature market activities. Consequently, the regulatory bodies in the majority of the countries analyzed adopt or issue approval for the development and construction plans of monopolistic activities as a prerequisite for the determination of the prices for regulated services. The legal authority of a regulatory body to adopt or issue approval for the development and construction plans of energy entities in principle does not provide an answer to how much of a right the regulatory body has to interfere in the development and construction plans of energy entities. Therefore, the question is very often posed at the beginning of the introduction of regulatory practices concerning how competent a regulatory body can be when entering into a discussion on individual conceptual solutions, i.e. individual technical questions. The practice of the regulatory bodies in the EU or the members of the ERRA, with longer regulatory experience than the CERA, has shown that conceptual solutions and criteria for the construction of facilities are in principle the decision of the energy entity, while the regulatory body approves business plans including the financial coverage of the investment plan. Parallel to approving business plans, the regulatory body determines the justified level of efficiency and the level of the quality of supply, so that a reduction in expenditures does not lead to a reduction in the quality of the supply.

Regulatory policy can have a significant impact on the future revenue of an energy entity through the determination of the regulatory asset base in which approved investments are made and through the determination of the efficiency factor. The approved level of investment is significantly reflected in the amounts of the regulated prices determined from the application of a regulatory method. Similarly, if an investment is recognized in *CAPEX* and is not implemented during the regulatory period for which it has been approved, it is not justified to include it in *CAPEX* again for the subsequent regulatory period. If the regulatory period is short, such as, for example, one year, the question is posed how the regulatory body will monitor the implementation of the investment and its inclusion in *CAPEX*. The regulatory approaches analyzed in this article have demonstrated that when determining *CAPEX*, i.e. considering the efficiency of an individual energy entity, it is necessary to analyze expenditures over a long period of time. With such analysis, i.e. the application of the benchmarking method to a complex

latornog tijela tijekom procesa utvrđivanja cijena reguliranih usluga.

HERA, prilikom donošenja tarifnih sustava i opredjeljenja za metodu regulacije priznatih troškova, nije razmatrala posljedice koje regulatorni pristup može imati na dozvoljeni prihod reguliranih energetskih subjekata. Ujedno nije zauzela jasan i nedvosmislen stav prema nizu pitanja i dilema koje se mogu javiti tijekom postupka davanja suglasnosti na planove razvoja i izgradnje prijenosne i distribucijske mreže kao i tijekom davanja mišljenja na prijedlog energetskih subjekata o iznosu tarifnih stavki. Stoga je postupanje hrvatskog regulatornog tijela u postupku donošenja reguliranih cijena na temelju neke od poznatih metoda ekonomske regulacije još uvijek nedefinirano te nema dosadašnje prakse koja bi se mogla analizirati. Isto tako nepoznata je praksa HERA-e u smislu davanja suglasnosti na planove razvoja i izgradnje HEP OPS-a i HEP ODS-a.

Imajući u vidu dosadašnji tijek uvođenja ekonomske regulacije u Hrvatskoj te argumentaciju iz članka kao i iskustva drugih regulatornih tijela zaključak je autora da se zakonsko rješenje nužno mora mijenjati u više segmenata.

Prvo, da se prilikom definiranja nadležnosti HERA-e definiraju sve njene nadležnosti kroz zakonske odredbe, a ne da se naknadno iste utvrđuju kroz podzakonske akte koje donosi MINGORP ili HERA, kao što je to npr. slučaj s davanjem suglasnosti na planove poslovanja ili planove razvoja i izgradnje energetskog subjekta za proizvodnju i opskrbu električnom energijom.

Drugo, da se uloga HERA-e i primjena neke od poznatih metoda ekonomske regulacije ograniči samo na monopolne djelatnosti za koje su iste i razvijane. Naime, regulacija cijena u klasičnom smislu riječi gubi važnost u djelatnostima koje su po svom karakteru tržišne (u kojima tarifa značajno ovisi o parametrima na koje energetski subjekt ne može utjecati i koje regulatorno tijelo ne može nadzirat, kao što je to npr. cijena goriva) i u kojima regulatorno tijelo ne daje suglasnost na planove, kao što je to slučaj s proizvodnjom i opskrbom električnom energijom.

Treće, zakonsko rješenje sa samo polovično definiranim rokovima pokazalo se kao nedostatno. Naime, predviđen je rok za donošenje tarifnih sustava bez visine tarifnih stavki, a da nije predviđen rok za donošenje iznosa tarifnih stavki.

Posljedica ovakvog slijeda zakonskih rješenja je da su tarifni sustavi doneseni u prosincu 2006. godine, a da nisu prije toga napravljene simulacije

group of data, the credibility and transparency of the behavior of the regulatory body during the process of the determination of the prices for regulated services would be assured.

When adopting tariff systems and deciding upon the method for the regulation of the rate of return, the CERA did not consider the consequences that a regulatory approach can have on the allowed revenue of entities performing regulated activities. It also did not assume a clear and unambiguous position toward a series of questions and dilemmas that can arise during the procedure for the issuing of approval for the development and construction plans of the transmission and distribution networks as well as when issuing an opinion on proposals by energy entities on the amounts of tariff items. Therefore, the procedure by the Croatian Energy Regulatory Agency in the adoption of regulated prices on the basis of some of the recognized methods of economic regulation has still not been defined and there is no practical experience to date that could be analyzed. Similarly, the CERA's practices in the sense of issuing approval for development and construction plans for the transmission system operator and the distribution system operator are also unknown.

Bearing in mind the progress thus far in the introduction of economic regulation in the Republic of Croatia and the argumentation from the article, as well as the experiences of other regulatory bodies, it is the authors' conclusion that several segments of the legislative solution in the Republic of Croatia must be changed.

First, all of the CERA's authorities should be defined through legal provisions instead of determining them retrospectively through regulations issued by the Ministry of the Economy, Labor and Entrepreneurship or the CERA, such as, for example, the case of issuing approval for the business plans or the development and construction plans of an energy entity for the generation and supply of electrical energy.

Second, the role of the CERA and the application of some of the recognized methods of economic regulation should be limited to the monopolistic activities for which they were developed. Price regulation in the classical sense has diminished significance in activities with a market character (in which the tariff significantly depends upon parameters which the energy entity cannot influence and which the regulatory body cannot supervise, such as, for example, the price of fuel) and for which the regulatory body does not issue approval for plans, such as in the case of the generation and supply of electrical energy.

prihvaćene metode priznatih troškova s ulaznim podacima od HERA-e odobrenih planova razvoja i izgradnje reguliranih energetskih subjekata. Takva simulacija iznosa tarifnih stavki bi na razvidan način prikazala HERA-in stav prema priznavanju razine *OPEX*-a i *CAPEX*-a.

Third, a legal solution with only partially defined deadlines has proven to be insufficient. The deadline has been set for the adoption of tariff systems without the stipulation of the amounts of the tariff items, and the deadline for the adoption of the tariff items has not been set.

As a consequence of such a sequence of legislative solutions, the tariff systems were adopted in December 2006 without prior simulations based upon the accepted rate of return method and the input data came from development and construction plans of the entities performing regulated activities which the CERA had not previously approved. Such simulations of the amounts of the tariff items would present the CERA's position toward the recognized levels of *OPEX* and *CAPEX* in a transparent manner.

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