

Fossil Fuel Subsidies in the Western Balkans

A REPORT FOR UNDP

December 2011



Note: This is a preliminary approach to the study of fossil fuel subsidies in the Western Balkans. The author of the paper is Aleksandar Kovacevic.

This publication was issued by the Regional Bureau for Europe and the Commonwealth of Independent States (RBEC) in December 2011.

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Graphic design: Valeur (Slovakia)

ISBN 978-92-95092-44-0

Cover photo: © Tarboat - Flickr. Three locomotives standing outside a roundhouse next to the Kostolac 'A' power station in Serbia. These locomotives pull the trains that run from a local coal mine to a power station.

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1 : Executive summary

This paper builds on The WTO's Agreement on Subsidies and Countervailing Measures (WTO 1994) as a definition of subsidies and develops a specific price-gap method to estimate the relative level of subsidies in comparison with the national GDP of each country. This method is broadly in line with the price-gap approaches used by the World Bank, the IEA and other international organizations while taking into account specific fossil fuel price formations in the Western Balkans. It is, however, sensitive to the quality of available statistics, GDP estimations and the evolution of exchange rates.

Fossil fuel subsidies in the Western Balkans are not limited to prices below international fossil fuel prices where the price-gap could be easily and directly identified. The cost of provision of both domestic and imported fossil fuels is exceptionally high and subsidies are mainly focused on moderating the monetary costs of fossil fuel provision and bringing nominal prices close to international prices in order to maintain the nominal competitiveness of at least some segments of the economy. Domestic production of fossil fuels is inefficient, lacks economies of scale and taps low-quality resources. The importation of fossil fuels to the Western Balkans lacks economy of scale, carries significant security of supply costs and remains exposed to monopolistic pressures. The massive and complex subsidy system aims at transferring a significant proportion of fossil fuel costs to the public. In the short term, it facilitates employment in industry and the well-being of the

population while creating unsustainable long-term fiscal risks.

Together with physical transport barriers, fossil fuel subsidies effectively create a strong barrier to entry not only to international trade in energy, but also to international investors in both energy and other sectors of the economy that are more sensitive to price signals than domestic state-owned enterprises (that are granted soft budget constraints).

Subsidies facilitate the continued use of uncompetitive technologies and fossil fuel resources as well as unsustainable employment levels and an uncompetitive composition of employment across a region which is slow to turn towards sustainable economic development. The key effects of subsidies is moderating the cost of fossil fuel extraction, processing and delivery and allowing distribution of natural resource rents from uncompetitive natural resources that are not likely to be exploited under competitive market conditions. Subsidizing uncompetitive fossil fuels to make them competitive prevents market entry both for efficient fuels, renewable energy and more productive technologies.

Very few subsidies are intended for or made available to the most vulnerable part of the population. Most of subsidies actually reach the better-off part of the population which has a higher than average fossil fuel consumption. Even with the subsidies, much of the poorer part pop-

ulation is exposed to fuel poverty due to the regressive distribution of the subsidies and to low energy efficiency.

Fossil fuel subsidies may be estimated to constitute between 5 and 11% of GDP in most countries with the exception of Kosovo (UNSCR 1244/99)¹ where the total effect of fossil fuel subsidies is higher. Most fossil fuel subsidies take the form of delayed environmental, maintenance and replacement costs, tax exemptions, slack collection policies and delayed payments to foreign suppliers. These unpaid costs have a cumulative effect and pose massive fiscal risks in the medium to longer term.

The fossil fuel subsidy system in all countries is complex and not reported fully in fiscal reports, energy or environmental statistics. Fiscal accounting and energy and environment statistics in all countries have to be improved and made more consistent in order to provide a firmer basis for policy formulation.

Fossil fuel subsidy reform is critical to the accession process to the European Union and compliance with the Energy Community Treaty. From another perspective, the Energy Community Treaty provides a critical framework and development context for fossil fuel subsidy reform.

Missing environmental, maintenance and replacement costs provide an opportunity to extract rents from low-quality and uncompetitively-priced natural resources. Without subsidies these resources will not be utilized and natural resource rents will not be available. The opportunity to distribute rents has a profound impact on the quality of governance throughout the region. It adds the vested interest of administration to the conventional set of interests related to fossil fuel subsidies. Therefore, countries in the Western Balkans may re-

quire high-quality and complex policy assistance to reform fossil fuel subsidies.

Reforms need to be implemented gradually, but with a clear and firm deadline. A good part of the fiscal costs may need to be used initially to facilitate green investment, increased energy efficiency in production and consumption, and to refocus economic activity from energy-intensive to less energy-intensive sectors. Reforms will involve true integration into the European Union (EU) energy market, greater openness to international competition and the introduction of large transit energy flows in order to build up a minimal economy of scale. Phasing out fossil fuels with massive market penetration (lignite) and high costs will require comprehensive long-term national strategies and entirely new arrangements regarding security of supply. A reasonable pace would be a reduction of 1-3% of gross domestic product (GDP) per year (this would imply a back-loaded effect – a smaller part of total subsidies would be cut in the first years of the scheme).

The introduction of renewable energy sources provide an opportunity to phase out some fossil fuels (and associated subsidies and natural resource rents) while maintaining appropriate security of supply. The build-up of productivity in the provision of renewable energy – in particular biomass – as well as region-wide enabling frameworks when it comes to the use of significant hydro power resources (in most cases cross-border resources) are highly desirable.

The phasing-out of fossil fuel subsidies in the Western Balkans is to be one component in the context of turning around energy policy, new investments frameworks and intergovernmental arrangements. The European Commission indicates that 'it is unreasonable to expect reform without offering an alternative plan for invest-

¹ Kosovo as per United Nations Security Council Resolution 1244/99, is hereinafter referred to as Kosovo.

ment, for price restructuring and for targeted protection of vulnerable consumers². Out of this context, an increase in fossil fuel and related energy services prices to a long-term marginal cost coverage level is not going to be feasible.

Critical reform components should include: (1) better reporting including energy statistics, environmental statistics, fiscal accounting and living standards surveys as well as improved consistency of reporting; (2) strict implementation of the Energy Community Treaty within envisaged deadlines; (3) accession to the Extracting Indus-

tries Transparency Initiative (EITI); (4) regional arrangements regarding cross-border water flows and hydro energy; (5) property rights and ownership structures to enable massive development of biomass resources; (6) national plans to eradicate energy poverty by improving energy efficiency and national industry development strategies; (7) reporting of all outstanding debts to foreign fossil fuel suppliers and the security of supply aspects these debts might have; (8) indicating cumulative environmental problems arising from uncovered environmental costs and strategies to manage these problems.

² *Report from the Commission to the European Parliament and the Council under Article 7 of Decision 2006/500/EC (Energy Community Treaty) /* COM/2011/0105 final */.*

2 : Introduction

Fossil fuel subsidies are considered to be the most critical impediment to investment in the energy sector in the Western Balkan countries that are signatory parties to the Energy Community Treaty with the European Union (EU)³. In its recent report to the European Parliament and the Council, European Commission states as follows:

‘The primary condition for new investments is undertaking price/subsidy reform. The current price and tariff levels, often below cost recovery, constitute a market distortion and hamper policies to promote demand management and energy efficiency. This, compounded with low levels of electricity billing and revenue collection imperil the financial viability of some of the power utilities, which is currently remedied by costly state subsidies. Special efforts therefore need to be made on price and tariff reform with due attention to the protection of vulnerable consumers, to the removal of administrative burdens and the establishment of an independent Regulatory Authority which guarantees transparency of the market and non-discriminatory treatment of the market participants. The Commission recognizes that it is unreasonable to expect reform without offering an alternative plan for investment, for price restructuring and for targeted protection

of vulnerable consumers. The Commission intends to take the lead in this area by offering specific advice on structural reform.

Emphasis will be placed on the social impacts of reform. The Contracting Parties need to develop efficient energy welfare systems and targeted subsidy schemes. The most notable efficiency is to increase the level of payment coverage (that is, to reduce the number of persons to whom energy is supplied, but who do not pay). Another efficiency that must be considered is removing of blanket subsidies, and targeting subsidies on the poor and the vulnerable. The Contracting Parties need to realize what are the costs of not reforming, in terms of increased energy intensity, lost welfare, lost economic growth, a degraded environment and health impacts.’⁴

Moreover, the same report indicates a need for countries to focus on implementation of the treaty and facilitate investments in energy infrastructure. Investments are required to meet the EU Environmental Acquis imposed by the treaty, provide better quality of energy services and energy security as well as to improve energy efficiency. In most of the countries, the energy sector is the largest single recipient of international (including EU) assistance both in

³ http://www.energy-community.org/portal/page/portal/ENC_HOME.

⁴ Report from the Commission to the European parliament and the Council under Article 7 of Decision 2006/500/EC (Energy Community Treaty) as of March 10, 2011

direct assistance and loans from international financial institutions.

The general characteristics of fossil fuel subsidies across the Western Balkans are their implicit character and multiplicity of forms. Subsidies are not easy to observe and not reported in regular budget reports. Fossil fuel subsidies in the West-

ern Balkans are complex and spread along the value chain – from upstream to downstream activities and energy use.

Understanding these subsidies and their cumulative effect is critical to inform structuring of reforms, investments and targeted assistance.

3 : Identification and definitions

Definition

The most comprehensive and widely-used definition of fossil fuel subsidies is based on the World Trade Organization (WTO) Model definition as follows:

The WTO's Agreement on Subsidies and Countervailing Measures (WTO 1994) states that a subsidy shall be deemed to exist if either 1 or 2 is satisfied:

1. There is a financial contribution by a government or any public body within the territory of a Member (referred to in this Agreement as government), i.e. where:
 - (i) A government practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);
 - (ii) Government revenue that is otherwise due is forgone or not collected (e.g. fiscal incentives such as tax credits);
 - (iii) A government provides goods or services other than general infrastructure, or purchases goods;
 - (iv) A government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or

more of the type of functions illustrated in (i) to (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments;

2. There is any form of income or price support in the sense of Article XVI of GATT 1994; and a benefit is thereby conferred.⁵

This definition is based on the international Agreement from the framework of the WTO. Albania, Croatia and the former Yugoslav Republic of Macedonia are members of the WTO and signatories of the Agreement on Subsidies and Countervailing Measures. Bosnia and Herzegovina, Montenegro and Serbia are observers to the WTO and not signatories of the agreement while Kosovo was not involved in the WTO process as of June 2011. Therefore, the above definition may not be binding for all Western Balkan countries. However, as all countries have demonstrated an interest in joining both the EU and the WTO, it is to be considered that above definition is the basis for analyses of fossil fuel subsidies.

Using this definition, the World Bank provides the following classification of government interventions in energy markets:

⁵ In order to provide a practical clarification about what should be considered a subsidy under this Agreement, the document includes an annex that specifies a set of illustrative examples of practices that constitute, for the WTO, export subsidies. Source: www.wto.org/english/docs_e/legal_e/24_scm.pdf.

Table 1: Overview of forms of government intervention in energy markets according to the World Bank's 'Background Paper for the World Bank Group Energy Sector Strategy'⁶:

Intervention type (a, b)	Description
Natural resource access ^a	Policies governing the terms of access to domestic onshore and offshore resources (e.g., leasing)
Cross-subsidy ^{a,b}	Policies that reduce costs to particular types of customers or regions by increasing charges to other customers or regions
Direct spending ^b	Direct budgetary outlays for an energy-related purpose
Government ownership ^b	Government ownership of all or a significant part of an energy enterprise or a supporting service organization
Import/export restriction ^a	Restrictions on the free market flow of energy products and services between countries
Information ^b	Provision of market-related information that would otherwise have to be purchased by private market participants
Lending ^b	Below-market provision of loans or loan guarantees for energy-related activities
Price control ^a	Direct regulation of wholesale or retail energy prices
Purchase requirements ^a	Required purchase of particular energy commodities, such as domestic coal, regardless of whether other choices are more economically attractive
Research and development ^b	Partial or full government funding for energy-related research and development
Regulations ^a	Government regulatory efforts that substantially alter the rights and responsibilities of various parties in energy markets or that exempt certain parties from those changes
Risk ^b	Government-provided insurance or indemnification at below-market prices
Taxes ^b	Special tax levies or exemptions for energy-related activities

a. Can act either as a subsidy or as a tax depending on program specifics and one's position in the market place.

b. Interventions included within the realm of fiscal subsidies.

⁶ Koplou, Doug. 2004. 'Subsidies to Energy Industries'. In *Encyclopedia of Energy*, Volume 5, ed. Cutler Cleveland. Amsterdam: Elsevier Inc. From Background Paper for the World Bank Group Energy Sector Strategy, 'Subsidies in the Energy Sector: An Overview', World Bank, July 2010

It is possible to distinguish between:

- explicit subsidies that are covered – in one way or another – from the public budget. These subsidies are the most transparent and could be visible from formal acts related to the national budget;
- implicit subsidies are paid by the company that actually supplies energy or energy services while there is no immediate or direct transfer of funds from the government budget to the company. It is also to be considered as a quasi-fiscal activity. However, it might be covered at another point in time by direct transfer or provision of some other rights, opportunities or ‘unrelated’ payments from the government budget. Companies could cover the burden of these subsidies by increased borrowing with or without state guarantees;
- cross-subsidies involve one category of consumers paying more than the general cost of supply and the surplus is used to subsidize provision of fuels by another group of consumers at prices that are lower than the cost of supply to the subsidized group;
- tax subsidies are applied in case when taxation of energy products or services is reduced to below optimal level for the supply-demand situation and social objectives of the government. This causes a loss in fiscal revenues that needs to be compensated by fiscal adjustments and increases in other forms of taxes beyond optimal level.

From another perspective, subsidies could be directed to producers (or energy service providers) or consumers. The economic impact of these two types of subsidies could be significantly different,

in terms of developing the potential to create linkages with, or assist in reaching the objectives of the government. Fossil fuel subsidies could be also classified according to transactions in the fossil fuel value chain to upstream and downstream subsidies. The form of subsidy is made suitable to a particular sort of transaction along the value chain (access to resources – extraction – transport – processing – distribution – retail sales – use). Apart from subsidies that are directed to particular transactions along the value chain, neglect of external costs of fossil fuel emerges as an important source of implicit subsidies. When environmental costs or costs related to the security of supply are not properly internalized that could effectively serve as a subsidy to fossil fuel. When environmental costs or costs of security of supply are not covered there is a tendency towards cumulative growth of environmental or security problems. The piling up of these unpaid expenditures could, in many cases, emerge as a problem by itself and create additional remediation costs.

Subsidies are also matter of supply and demand for subsidies themselves. There is demand for subsidies from various transactors (industry or consumers) while the government emerges as the supplier of both explicit and implicit subsidies. When a subsidy is granted to a group of recipients⁷ their benefits generally fall short of damage to public interests⁸. There is tendency to ‘lock in’ subsidies and establish high barriers to entry to the subsidies market that makes most of subsidies persistent and difficult to reform or remove.

Cross-subsidies affect relative prices/costs of fuel and transaction costs in a way and magnitude that could have energy policy implications. The

⁷ Fossil fuels and energy services based on fossil fuels in Western Balkan countries are delivered by small number of corporate entities. Even if there is wider group of retailers (such as in retailing liquid fuels) these retailers are supplied by very few wholesalers. Consequently incumbent energy companies form a group in terms of Mancur Olson theory. Potential elasticity of supply however remains high as transport routes and new technologies are available to external competitors. Therefore, incumbents are likely to prefer government intervention and para-fiscal subsidies against direct cash subsidy in line with the George Stigler argument. In the same time, para-fiscal nature of subsidies extends Government control beyond what is determined in public budget and controlled by Parliaments.

⁸ Stigler, George J., ‘The Theory of Economic Regulation’, *The Bell Journal of Economics and Management Science*, Vol. 2, No. 1, (Spring, 1971).

consequences and expenses of some subsidies (including, especially, subsidies linked to externalities) tend to cumulate over time and to add additional costs to the provision of fossil fuels and energy services as well as to build up further barriers to entry for alternative energy sources or alternative energy policies as well as energy efficiency investments.

The EC Treaty discusses competition in Articles 81, 82, 86(1) and 86(2), and 87⁹. Article 87 (107) fo-

cus on state aid and subsidies¹⁰. These EU regulations are built into the Energy Community Treaty (Chapter IV of Title II of the Treaty (The Acquis on Competition) Articles 18 and 19¹¹) signed and ratified by the Western Balkan countries considered in this paper. It is to be applied in a similar manner as in the European Union according to consideration made within the scope of the Energy Community Treaty¹². The definition of fossil fuel subsidies in the context of the EU Environmental Acquis¹³ is applicable to all Western Balkan

⁹ Pursuant to the Treaty on the Functioning of the European Union (TFEU), these Articles have been re-numbered, and will hereafter be referred to as, Articles 101, 102, 106(1) and 106(2), and 107 TFEU, respectively.

¹⁰ 'Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favoring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market.'

¹¹ Article 18.

1. The following shall be incompatible with the proper functioning of the Treaty, insofar as they may affect trade of Network Energy between the Contracting Parties:

- (a) all agreements between undertakings, decisions by associations of undertakings and concerted practices which have as their object or effect the prevention, restriction or distortion of competition,
- (b) abuse by one or more undertakings of a dominant position in the market between the Contracting Parties as a whole or in a substantial part thereof;
- (c) any public aid which distorts or threatens to distort competition by favoring certain undertakings or certain energy resources.

2. Any practices contrary to this Art shall be assessed on the basis of criteria arising from the application of the rules of Arts 81, 82 and 87 of the Treaty establishing the European Community (attached in Annex III).

Article 19

With regard to public undertakings and undertakings to which special or exclusive rights have been granted, each Contracting Party shall ensure that as from 6 months following the date of entry into force of this Treaty, the principles of the Treaty establishing the European Community, in particular Art 86(1) and (2) thereof (attached in Annex III), are upheld.

¹² Hunton and Williams, Eisenberger and Herzog: 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', Study on behalf of the Energy Community Secretariat, Workshop on State Aid, Vienna, 22 March, 2011.

¹³ Following the same source, subsidies could be considered according to the following criteria:

- Transfer of state resources
 - Measures granted or imposed by a public authority (national, regional or local authorities, public banks and foundations, etc.) which involve state resources.
 - 'Aid' goes far beyond direct subsidy: grants, loans and loan guarantees, capital injections, tax exemptions – maybe state aid.
- Economic advantage
 - Measures such as grants, loan guarantees, and tax exemptions obviously provide an advantage.
 - 'Less obvious' examples: privileged access to infrastructure, rent or purchase land at below market price, more favorable terms on risk capital (private investor principle).
- No economic advantage ('Altmark')
 - Beneficiary entrusted with services of general economic interest.
 - Parameters for calculating compensation payments set in advance, objective and non-discriminatory.
 - Compensation must not exceed cost incurred in discharge of public services, also taking into account any revenues.
 - Beneficiary chosen in tender or compensation does not exceed cost of well-run undertaking.
- Selectivity
 - Aid must be selective (affect balance between certain companies and their competitors) while fossil fuel subsidy could also be general and available to all market participants.
 - Aid schemes are generally considered selective if authorities have discretionary power.
 - Also selective if applies only in parts of a member state (e.g. regional aid).
- Must have an actual or potential effect on trade and competition between member states.
- Criterion considered fulfilled if:
 - the beneficiary of aid is engaged in an economic activity, and
 - operates in a market in which there is trade between member states.

countries and they should pursue reform of existing fossil fuel subsidies. The European Commission is in a position to demand such reform of subsidies and also to order recovery of unlawful forms of aid that are incompatible with internal market.

States may regulate tariffs at low levels to support local industries with high energy consumption often financed by means of a para-fiscal levy imposed on all electricity consumers

Estimation methods

The three most common estimation methods to estimate fossil fuel subsidies are summarized in Table 2.

The price-gap method is suitable for multi-country comparisons if some international prices are used for comparisons. However, some forms of fossil energy are not extensively traded on the international market and therefore the prices of these forms are difficult – if not impossible – to be considered in comparison with the international market price. This applies to lignite, electricity and district heating services that are, in turn,

Table 2: Methods to estimate fossil fuel subsidies¹⁴

Approach / description	Strengths	Limitations
Price gap: Evaluates positive or negative between the domestic price of comparable products imported or exported, or the cost of efficient market supply	<ol style="list-style-type: none"> 1) Can be estimated with relatively little data; useful for multi-country studies 2) Good indicator of pricing and trade distortions 	<ol style="list-style-type: none"> 1) Sensitive to assumptions regarding efficient market and transport prices 2) Understates full value of supports because ignores transfers that do not affect prices
Programme specific: Quantifies value of specific government programme to particular industries; aggregates programmes into overall level of support	<ol style="list-style-type: none"> 1) Captures transfers whether or not they affect end-market prices 2) Can capture intermediation value (which is higher than the direct cost of government lending and insurance) 	<ol style="list-style-type: none"> 1) Does not address questions of ultimate incidence or pricing distortions 2) Sensitive to decisions on what programmes to include
Producer subsidy equivalent / consumer subsidy equivalent: Systematic method to aggregate transfers plus market supports to particular industries	<ol style="list-style-type: none"> 1) Integrates transfers with market supports into holistic measurement of support 2) Separates effects on producer and consumer markets 	<ol style="list-style-type: none"> 1) Data intensive 2) Little empirical producer subsidy equivalent / consumer subsidy equivalent: data needed primarily for fossil fuel markets

¹⁴ Background Paper for the World Bank Group Energy Sector Strategy, 'Subsidies in the Energy Sector: An Overview', World Bank, July 2010.

the most widespread forms of fossil fuels used in the Western Balkans.

When subsidies are to be considered in the context of the impact on the domestic economy, the evolution of local risks or national budgets, consideration should be given to the price-gap between the total cost of energy and the price at which it is delivered to the end consumer if that price is below total costs plus applicable taxes, delivery (transmission, distribution, retail) costs, and taking into account actual collection rates. The domestic economy is affected by that broad price-gap. It is to be considered that the price-gap method based on international prices¹⁵ underestimates subsidies actually created in country where provision of fossil fuel is below international efficiency and productivity standards and those that are net importers of fossil fuels.

The Western Balkan countries are net importers of fossil fuels. A large part of their domestic sources of fossil fuels is in the form of lignite, electricity and district heating which are not internationally tradable forms of energy. These are all high cost supplies. In the case of natural gas, crude oil and petroleum products countries are often supplied off-market by a single dedicated supplier or via exceptionally inefficient supply channels. The costs of such supplies are high by European standards. It is to be considered that the use of the international price of fossil fuels to estimate fossil fuel subsidies by the price-gap method in the case of the Western Balkan countries will lead to a serious underestimation of the actual economic effects of these subsidies.

Therefore we can consider following a specific price-gap method comparing prices that cover

¹⁵ For comparison: the International Energy Agency used a modified price-gap method based on international competitive prices and comparable generation costs/prices for electricity in the 'World Energy Outlook 2010'. This estimation is intended for international comparisons of fossil fuel subsidies and as an indication of the impact these subsidies could have on climate change abatement costs and potentials.

¹⁶ Total volume of electricity estimated according to ENTSO datasets and compared with the Energy Community Treaty related reports as well as USAID SEE REREP Reports (2010) for particular countries.

¹⁷ Estimated by the author and following the World Bank Report on Energy Efficiency in the Western Balkans (2010).

¹⁸ Low conversion efficiency of oil refineries in the region and high procurement costs of crude oil are offset by very low concessions royalties for domestic crude production (Serbia, Croatia) and low petroleum product taxes. This practice provides for relatively comparable retail prices for petroleum products. Taxes estimated according to a study by GTZ (see bibliography for details).

¹⁹ For district heating the general rule is 150kWt per square meter of heated space and 55% boiler efficiency under variable load conditions. This also covers network losses that are variable from system to system. However, critical losses in district heating (DH) systems are a missed opportunity to convert the same volume of fuel to much higher-value energy services (electricity) according to the law of thermodynamics. Consequently, unit prices for low-grade heat delivered are comparable to prices per unit of electricity. Direct subsidies provided to district heating companies cover only a small proportion of actual opportunity loss for national productivity. It was possible to consider the difference between the total cost of heat delivered and the revenues collected as a flat margin of 14% only in Serbia and Croatia, where district heating services are a relatively significant part of the heat market.

²⁰ The total cost of electricity is calculated as taking into consideration the current cost of production (without opportunity costs for hydro energy as the calculation is only focused on fossil fuel-based electricity) and covers the direct cost of electricity at the plant gate. These prices are then increased for actual network losses and adjusted for actual collection rates. The difference between that price and actual nominal price is considered to be the unit price-gap. The total subsidy is calculated by multiplying the unit price-gap by the total electricity supply. This method assumes that fossil fuel power generation is also partly subsidized by a cross-subsidy from hydro power generation, which represents a net loss for society as hydro power resource rents could be better used.

²¹ According to the Energy Community of South East Europe (ECSEE) reports.

²² Not considered in numerical calculation. Numerical calculation only covers environmental costs that are envisaged by the Energy Community Treaty and climate change related costs are not yet included.

²³ Actual sales prices for electricity estimated according to the European Bank for Reconstruction and Development (EBRD) Structural and Institutional Change Indicators Database and compared with reports from the Energy Community Treaty framework.

²⁴ EBRD country datasets/EBRD data base of economic information, the World Bank Database.

²⁵ According to the EBRD Sustainable Energy Initiative (SEI) database.

Table 3: Components of full cost covering fossil fuel prices for a total volume of fuel¹⁶ (total volume x average cost)

Domestic fossil fuels	Imported fossil fuels
Competitive concession royalty + natural resource rents + opportunity costs + marginal costs of extraction + environmental costs of extraction	Import costs including transport + security of supply risk coverage + environmental costs of transport and storage
x	X
Rate reflecting efficiency of conversion ¹⁷	Rate reflecting efficiency of conversion ¹⁸
+	+
Marginal costs of conversion ^{19,20}	Marginal costs of conversion
+	+
Environmental costs of conversion	Environmental costs of conversion
+	+
Transmission, distribution and retail losses ²¹	Transmission, distribution and retail losses
+	+
Comparable taxes	Comparable taxes
+	+
Environmental costs of end use	Environmental costs of end use
+	+
Climate change risks ²²	Climate change risks
=	=
Price covering costs excluding commercial profits	Price covering costs excluding commercial profits
-	-
Actual sales price ²³	Actual sales price
=	=
Fossil fuel subsidy	Fossil fuel subsidy
/	/
Nominal GDP ²⁴ x 100	Nominal GDP x 100
=	=
Fossil fuel subsidy as percentage of nominal GDP	Fossil fuel subsidy as percentage of nominal GDP
Compared to Government expenditure as a share of GDP ²⁵	

the full marginal cost of fossil fuel/energy (including all costs of fossil fuel provision, environmental impacts, actual efficiency of extraction, processing, transmission, distribution and retailing, actual productivity during the process and risks accumulated along the value chain) with the prices paid by the end consumer. Taking into account the average price paid by all end consumers covers eventual cross-subsidies between various groups of customers. Cross-subsidies²⁶ are taken into account separately from the summary subsidy calculation and described below as appropriate.

Commercial profits are excluded from the calculation as governments acquired most of the nominal profits reported by state owned enterprises (SOE). In the case of privatization of SOEs involved in fossil fuel trade during the observed period, governments collected privatization proceedings that can

be considered as discounted future commercial profits. The market share of de novo companies trading fossil fuels is minimal and does not have a significant impact on this general calculation.

Where environmental costs are (in part or in total) paid to the public administration budget and then used for purposes other than actual abatement of environmental costs, that process is to be considered as general tax and not as part of actual environmental costs. Environmental costs are summarized in bulk according to the only available officially published environmental assessment of missed benefits²⁷ from compliance with the European Union Environmental Acquis for the Western Balkans and added to total subsidies²⁸.

To avoid the effects of fluctuating exchange rates²⁹ and, in particular, purchasing power parities, fossil fuel subsidies are presented as a per-

²⁶ This applies not only to cross-subsidies between various groups of customers but also to cross-subsidies between various fuels and energy services at micro or macro level.

²⁷ Following various reports published within the context of the Energy Community Treaty (and available at www.energy-community.org) assumption is made that no major compliance with the EU Environmental Acquis has been achieved in physical terms. Therefore, benefits of compliance remain potential, i.e. they could be considered as annual costs of non compliance or, in other words, subsidies from unpaid use of environmental public goods including: health, resources, ecosystems, social and wider economic benefits. The use of fossil fuels without compliance with the appropriate environmental acquis is therefore a form of subsidy. However, some environmental impacts are cumulative and the public carries the economic burden of historical impacts cumulated over a period of time. It has not been possible to estimate this effect. The EU Environmental Acquis was created for Western and Central European circumstances. In these geographical areas wind and general weather conditions allow higher emission levels per source than in the Western Balkan, where there is limited wind and most large combustion plants are located in low wind areas. Therefore, the estimation is to be considered as conservative.

²⁸ Arcades Ecolas, IEEP, 'Task 2 – Benefits for the former Yugoslav Republic of Macedonia and other countries of SEE of compliance with the environmental acquis Final report – Part I: General', Contract No. 07010406/2006/441662/MAR/E3, The European Commission, DG Environment, October 2007. The data from this report and the size of uncovered environmental costs in comparison with other subsidy components assume that the total subsidy could be fully estimated only for the year that is covered by this report.

²⁹ Available data sources provide foreign trade statistics in euros, while fossil fuel prices are usually calculated in US\$. Domestic currencies are either pegged to euros or countries actually use the euro (Montenegro, Kosovo) for domestic transactions. Domestic exchange rates appreciate when supported by foreign loans or an inflow of foreign investments (payments related to large privatizations, for example) while US\$ nominated prices of fossil fuels fluctuate regardless of international market fossil fuel prices. At the same time, foreign suppliers of liquid fuels and natural gas are ready to tolerate extended periods of non-payment providing therefore, implicit credit to countries in the region. It is to be considered that the extension and duration of these implicit credit arrangements are linked to political circumstances rather than commercial relations.

³⁰ There are considerable seasonal fluctuations in fossil fuel consumption: most natural gas is consumed during the winter, the agriculture season sparks additional diesel consumption and most lignite is consumed for power generation during the winter period. In some years, high import prices tally in time with high seasonal demand but this is not the case in other years. For example, during the gas supply crisis in January 2009, heavy fuel oil prices were higher than the relative prices of natural gas. Therefore the shift from gas to alternative fuel was financially beneficial while damage to equipment and to the environment was not immediately accounted for. At the same time, January 2009 saw massive water inflows into hydro power plants: the highest level in 100 years. This provided the region not only with additional electricity but also at a very low direct cost. These two factors (coincidental) and EU assistance moderated the actual cost of security of supply with natural gas.

centage of nominal GDP for a particular year. The assumption is made that fossil fuels are consumed in relation with GDP creation throughout the year³⁰.

An estimation is made for lignite, coal, petroleum products, natural gas, electricity and district heating services in total volumes delivered for final consumption. Provisional diagrams showing en-

ergy supply and end consumption are attached to each country description in Annex 2. Transactions or processes where subsidies are applied are indicated in red. Total volumes of fossil fuel supply to end consumers are extracted from reports published in the context of the Energy Community Treaty. GDPs are estimated according to the WIIW³¹ database and compared to the EBRD database.

³¹ Vienna Institute for International Economics.

4 : Application to Western Balkan countries

An estimation of fossil fuel subsidies in the countries of the Western Balkans is illustrated in Table 4 and Diagram 1 below.

This estimation is broadly in line with the estimation of subsidies for electricity made by the World Bank and the International Monetary Fund (IMF) for the period up to 2003 and without taking into consideration environmental costs (missed benefits of environmental compliance).

Countries in the Western Balkans do not provide adequate energy statistics while economic data (GDP, exchange rates) vary depending on the data source. Within the context of the Energy Community Treaty and with assistance of the International Energy Agency (IEA) and EuroStat considerable efforts have been taken in recent years to upgrade energy statistics toward EU standards and that is work in progress.

Table 4: Estimation of fossil fuel subsidies in the Western Balkans from 2005 – 2009 observations

Country	Energy related subsidies as % of GDP ³²	National budget as % of GDP
Albania	7-8%	32%
BiH	9-10%	45%
Croatia	5-6%	40%
FYROM	8-9%	35%
Montenegro	10-11%	43%
Serbia	7-9%	43%
Kosovo ³³	35-36%	35%

³² GDP levels estimated according to WIW and EBRD data bases.

³³ Kosovo's GDP is underestimated due to a very large informal economy. If Kosovo's actual GDP could be estimated, the subsidy share would be somewhat lower.

Diagram 1: Estimated fossil fuel subsidies

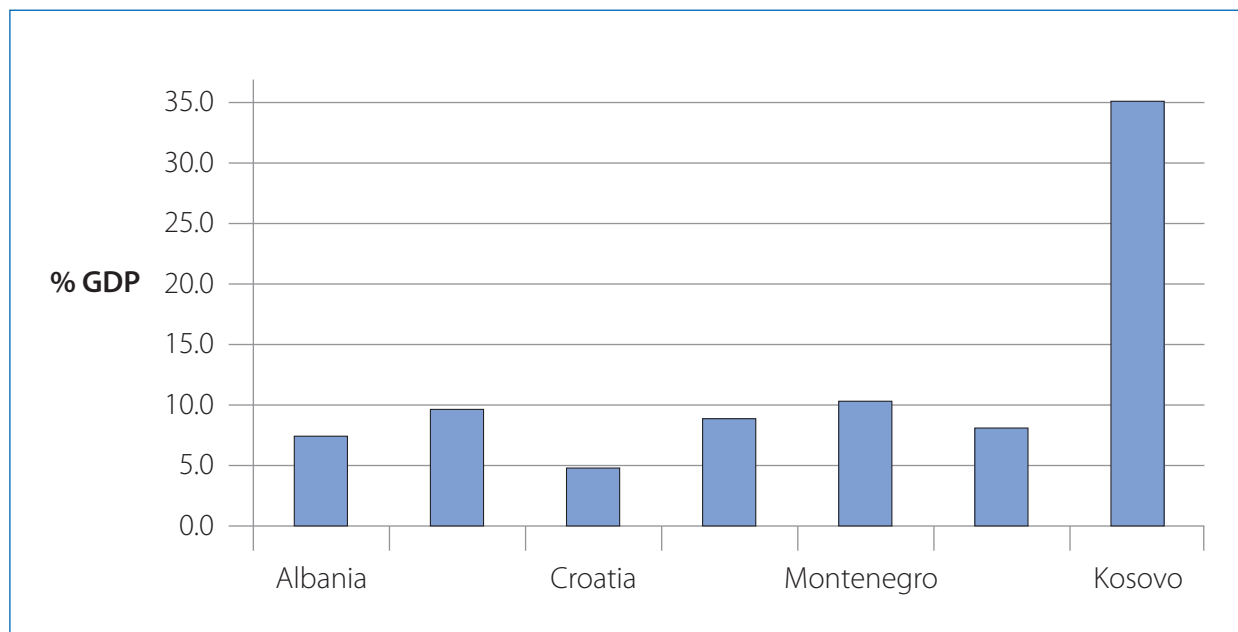
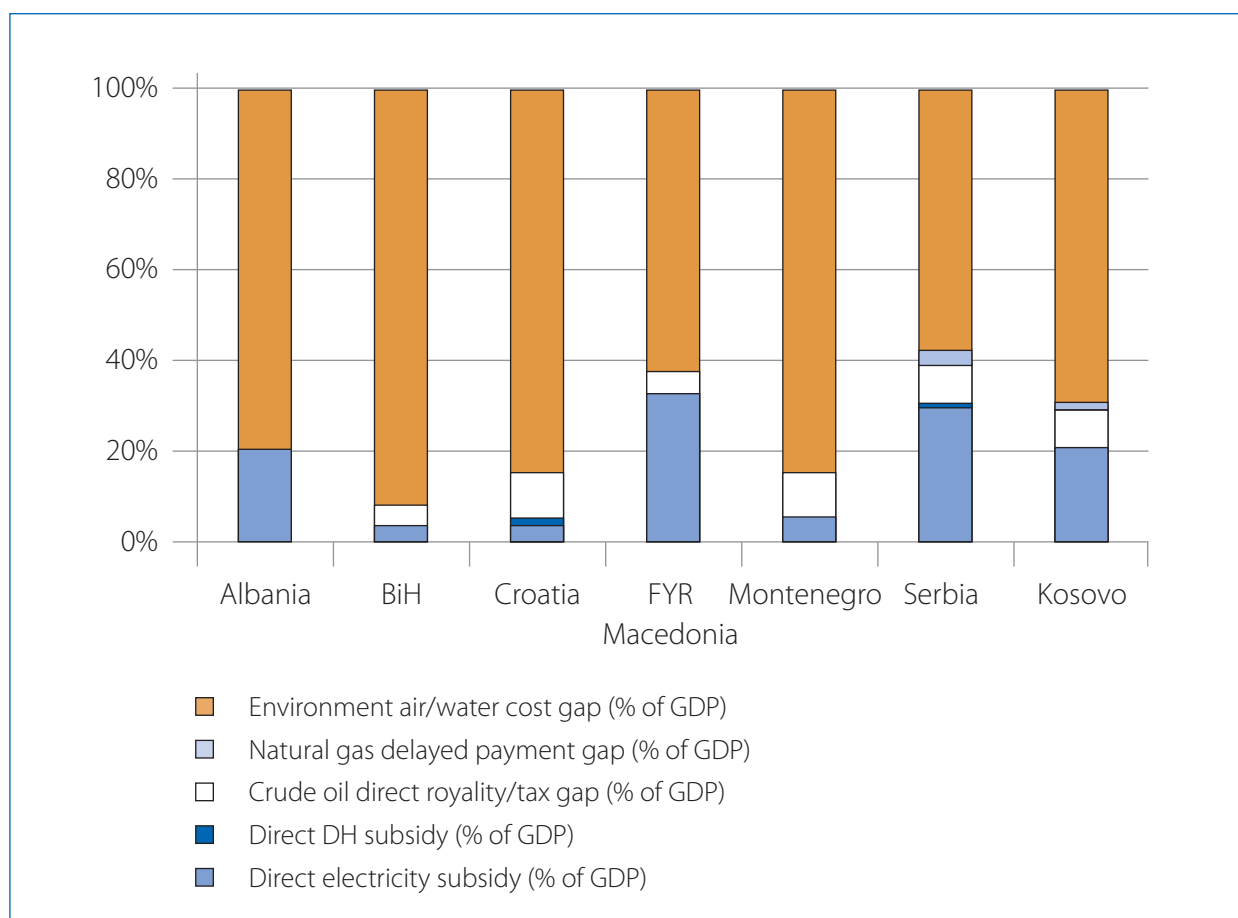


Diagram 2: Distribution of subsidies per type



Therefore, the estimation of fossil fuel subsidies provided herein is broad and conservative estimation. Inefficient use of fossil fuels generates more public harm than estimated here. The following aspects should be taken into consideration:

- uncovered or unprevented environmental costs are, in most cases, cumulative in nature. There are no estimates of cumulative effects and volumes in terms of health and soil impacts while future public budgets are likely to face and cover immediate or excessive expenditure created as a consequence of this cumulative effect, such as erosion, deforestation, sliding, health expenditures, etc.;
- fossil fuel subsidies play a role as barriers to entry and prevent international trade in energy-related products while also preventing investments. EBRD (2011) used the World Induced Technical Change Hybrid (WITCH) model to estimate GDP costs of climate change abatement under different scenarios. All Western Balkan countries are classified as Transition Economies Non-Exporters of Energy (TENEX). For all scenarios, abatement costs range to slightly over 5% of GDP³⁴ while a scenario with limited trade increases costs to almost 25% of GDP. Fossil fuel subsidies curb trade and investment including also investments that could facilitate emissions trading and – by doing that – increase a risk of massive increase in climate change abatement costs;
- the use of the average price in the domestic electricity supply prevents more economical use of hydro power resources including exports of peak power and flexibility services. This limits the potential to integrate more renewable energy into power generation both

in the region and throughout EU energy market. Available hydro resources make this region a potentially important provider of flexible services to the EU power markets. Missing that potential is an additional hidden cost of the subsidy system in place;

- the region has achieved considerable GDP growth over recent years that is not built on an increase in industry or agriculture. Financial services are the largest contributor to this impressive growth. Consequently energy consumption patterns remain largely the same in physical terms. The increased vulnerability of financial services to external shocks could lead to a sudden decrease in nominal GDP in which case regular and cumulated fossil fuel subsidies could reach unmanageable levels.

Only Albania and the former Yugoslav Republic of Macedonia are found to have relatively elastic demand for energy (in order of -0.7 to -0.8) in response to price signals^{35, 36}. In other countries elasticity remains much lower. Despite subsidized energy prices, firms in the region operate below an efficient level and could be able to increase output for a relatively modest increase in cost. This demonstrates that prices are subsidized in comparison with a very high cost of provision but not sufficiently to make firms competitive in an international context. An increase in energy prices (to cover all costs of provision) could trigger a chain of cost adjustments making many firms uncompetitive and forced to chase exports or even stop operation.

Small and state-owned firms are the most energy inefficient and most resistant to change in energy prices. It may be the result of their focus on the

³⁴ Compared to 2-5% of GDP for EU-10 countries.

³⁵ Iimi Atsushi, 'Price Elasticity of Nonresidential Demand for Energy in South Eastern Europe' Working Paper 5167, World Bank, January 2010.

³⁶ These two countries have an energy-intensive export industry that is capable of adjusting outputs according to relative costs and prices. Their simple energy sector structure does not provide a low to moderate adverse impact of price rises of one form of energy by providing a cross-subsidy via another form of energy. At the same time, these two countries are sufficiently small with relatively shallow financial markets (in comparison with their respective energy-intensive industries) to be able to spread and postpone excessive energy costs.

domestic or local market. However, de novo private companies and foreign owned companies³⁷ are sensitive to the quality and cost of energy services as revealed by following table:

tries is already at the level where it affects well-being and health. There is similar sensitivity between natural gas prices for household consumers and wood fuel consumption /living

Table 5: Assessment of transition challenges for energy and infrastructure³⁸ and CLIM Index³⁹

	Municipal and environmental infrastructure	Natural resources	Power	Sustainable energy	Transport	CLIM Index
Albania	4	3	3	3	4	0.199
Bosnia and Herzegovina	4	3	4	4	3	0.081
Croatia	3	2	3	3	3	0.290
FYROM	3	3	3	3	3	0.293
Montenegro	3	3	4	4	3	0.133
Serbia	3	3	4	4	3	0.139

Although elasticity of household electricity demand might look fairly significant while affordability of electricity remains acceptable, that is only achieved by conversion to wood fuel as a main household fuel⁴⁰. It comes with a cost: deforestation is already rampant, major hydro power lakes are severely exposed to erosion, water regimes are changed and more volatile and flood-like, water conservation on the territory is decreasing and the cost of both wood fuel and hydro energy is increasing. Household consumers are able to suppress electricity consumption by reducing heated living space. Available surveys find that reduction of living space in some coun-

space reduction in Croatia (which is the only country with significant natural gas penetration in the household market). To make the problem even more difficult, there is a link between electricity (natural gas) prices and wood fuel prices on the open market. Poor households might not be affected that much by electricity (or natural gas) prices since their consumption remains small in volume but there are severely impacted by wood fuel prices that peg the network energy price.

Consequently, the reform of energy subsidies will be a complex undertaking and include internalizing the costs of, and hence reducing the envi-

³⁷ Comparing results of the World Bank /EBRD BEEPS Survey 2005 and 2008 it turns out that, in 2005, only 26% of firms considered electricity as a problem in doing business while in 2008 that figure rose to 48%. The increase in Serbia was from 15% to 33%.

³⁸ Assessment of remaining transition challenges according to the EBRD Transition Report 2009 available online at www.EBRD.org. Score 1=negligible challenge, 4=large challenge

³⁹ CLIM Index is the Climate Laws, Institutions and Measures (CLIM) Index or CLIMI. It comprises 16 weighted indicators. Definition and scores according the 'Special Report on Climate Change: The Low Carbon Transition', EBRD, 2011. The best score is attributed to the United Kingdom (0.801) and the worst for Tonga (0.011) among 95 countries.

⁴⁰ There are very few studies that reveal sensitivity between electricity prices and wood fuel consumption. One available research is presented in Radevic, B., and K. Beegle. 2002. 'Living Standards and Poverty in Montenegro in 2002.' Center for Entrepreneurships and Economic Development, Podgorica, Serbia and Montenegro; and World Bank, Development Research Group, Washington, D.C.

ronmental impacts of, fossil fuel use – in particular lignite and heavy fuel oil – in line with reform of energy use, energy subsidies and pricing of various forms of energy. Taking into account that countries in the region score relatively poorly in the CLIM Index, indicating institutional capabilities, subsidy reform is to be considered only in

the context of wider energy market reforms as well as complex physical interventions in infrastructure that in turn require a dedicated set of investments.

More details on fossil fuel subsidies are provided below.

5 : Review of fossil fuel subsidies in the Western Balkans

Economic overview

Degree days for heating and cooling in the Western Balkans range up to 3,200 hours per annum, which is similar to the levels in the USA or Germany. However, energy intensity and carbon intensity of GDP in the Western Balkans is many times over the USA, or German or OECD average⁴¹.

GDP formation includes two almost entirely separate processes: (1) financial and other services that increase the share in GDP while facilitating nominal growth and providing financial means to carry on with high levels of energy subsidies and fiscal risks; and (2) a real economy that struggles with insufficiencies in infrastructure and energy supply and bears the cost of hidden subsidies (in particular environmental costs). If energy subsidies are removed by a simple increase in prices to cover all costs of energy provision, almost the entire population could slip into fuel poverty that, taking into account very limited price elasticity of energy use, could trigger disruption in financial markets. An increase in price elasticity of energy demand is a critical component of any economic policy that aims to facilitate the moderation of fiscal risks of fossil fuel subsidies. It should involve

the corporativization of state owned enterprises (SOE), the development of an entirely new type of export industry, far better integration of the region into international and EU markets, a massive shift in employment structure, etc.

Improving the elasticity of fossil fuel demand requires significant investments and the creation of a new industrial structure. However, poor security of supply and increasing uncertainties about energy costs are curbing investment opportunities. In the absence of massive changes in energy policy in the Western Balkans, investors can not be convinced that the long-term supply of energy is comparable with energy supplies elsewhere. When the industrial structure is given and cross-subsidies can be stipulated in contracts (which is the case in some privatization arrangements) while part of environmental costs are transferred to the public for that period of time, private investors may enter into an arrangement with the government. Any commercial company that eventually emerges from such an arrangement is locked into a certain energy supply-demand situation and not likely to have any better price elasticity of its energy demand.

⁴¹ Compare to IEA/UNDP 'Energy in the Western Balkans', Paris 2008.

In short, when subsidy structure is built into infrastructure and international relations, as is the case in the Western Balkans – it creates a long-term inelastic structure that is very difficult to change. It, in turn, facilitates the emergence of institutions characterized by the CLIM Index as described above.

Western Balkan countries are land locked in economic terms. Even countries that have geographical access to the open sea lack the economy of scale to make their ports competitive in terms of terminal costs to other European ports. The region needs to be much more open to the rest of European continent both in terms of physical infrastructure and market integration⁴² in order to achieve the appropriate economy of scale and integrate to international energy markets. From another perspective, South Eastern Europe in general and the Western Balkans in particular are below the European average (and also far below the world average) with regard to conventional energy resources. Available resources are rare, and spread across the territory⁴³, lacking economy of scale for economic exploitation, with low energy density or overall volumes which are too small to support economy of scale in exploration and production. Therefore, without integration into a wider energy market, Western Balkan countries are certain to have above average energy costs. From another perspective, the region inherited a very energy-intensive industrial structure built on the subsidized energy supply⁴⁴ and special international trade arrangements during 1970s. Consequently, subsidized energy is built not only into the industrial (demand side) structure but also into

structure of energy facilities and energy grids.

It is to be noted here that, circumstances are entirely different when it comes to renewable energy sources. From that respect the Western Balkans potential is to be considered as competitive.

Regulatory overview

The fossil fuel subsidies process goes largely beyond the control of regulators. The process is embedded in the vertical (lignite mines, power plants) and horizontal (hydro-thermo power plants) integration of state-owned assets, in terms of resources and infrastructure, communal services (such as district heating) and transport policies together with environmental impacts. Although regulatory institutions are mostly established in the region (see Table 6) their price setting mechanisms (see Annex 1 below) are insufficient to cover the problem of these subsidies.

Liquid fuels

Western Balkan countries are net importers of crude oil and petroleum products and are in a very similar (or even more difficult) position in terms of security of supply to other Western/Central European countries. It is to be expected that countries in such a supply situation will adopt similar taxation policies in order to cover security of supply risks and motivate efficient use of liquid fuels. The map below indicates that in the past the Western Balkan countries generally had a lower tax burden than desired, and also lower than that

⁴² *The Western Balkans' relatively poor endowment with conventional energy resources and the ultimate need for European energy market integration was already recognised many years ago. Compare, for example: Han, Stjepan, 'Some Economic Aspects of International Collaboration in the Production and Use of Power with Special Reference to the Southern Part of Central Europe.' Fifth World Power Conference, Vienna, 1956.*

⁴³ *For example, there are abundant lignite resources across the Western Balkans. Tens of lignite deposits are known. However, only two of these lignite basins are large enough to support thermal power plants with economy of scale to achieve the current standard of generation efficiency. These resources are located in the Dinaric valleys with little wind that makes further development under EU environmental standards practically impossible.*

⁴⁴ *Including special import arrangements.*

Table 6: Status of Regulatory Institutions in South East Europe by November 2008, by Country

		Separate regulator	Fixed-term appointment	Industry funding	Full tariff setting power	Transparency	Right to appeal
South East Europe	Albania	✓	✓	✓	✓	✓	✓
	Bosnia and Herzegovina	✓	✓	✓	✓	✓	✓
	Croatia	✓	✓	✓	✗	✓	✓
	FYR Macedonia	✓	✓	✓	✓	✓	✓
	Montenegro	✓	✓	✓	✗	✓	✓
	Serbia	✓	✓	✓	✗	✗	✓

Source: The World Bank 'Lights Out?', report, 2010

in the EU. Although the situation is improving as of 2010 and 2011, these countries are still not able to ensure adequate strategic reserves of fuel and provide for appropriate security of supply, fuel standards and necessary consumption adjustments.

Despite the lower overall tax burden, these countries could have higher retail prices of liquid fuels than in Central Europe and the EU. This is linked to very high import prices, lack of economy of scale in import and trade, the monopolization of imports, high transport, terminal and pipeline costs, inadequate economy of scale in local oil refineries (which the introduction of EU fuel quality standards will further complicate), poor efficiency and complexity of oil refineries and low productivity of distribution channels.

Western Balkan markets are not yet fully open for international competition and especially for competition from the Mediterranean fuel market. Government policy and cross-border disputes regarding major ports (both in the Adriatic and

the Danube) and railway links streaming from these ports are an effective barrier to entry.

In Croatia and Serbia⁴⁵ royalty payments for the exploitation of domestic crude oil resources are probably below international levels. State-owned companies that been assigned exploitation rights are now mostly privatized⁴⁶ and new owners have inherited exploitation arrangements.

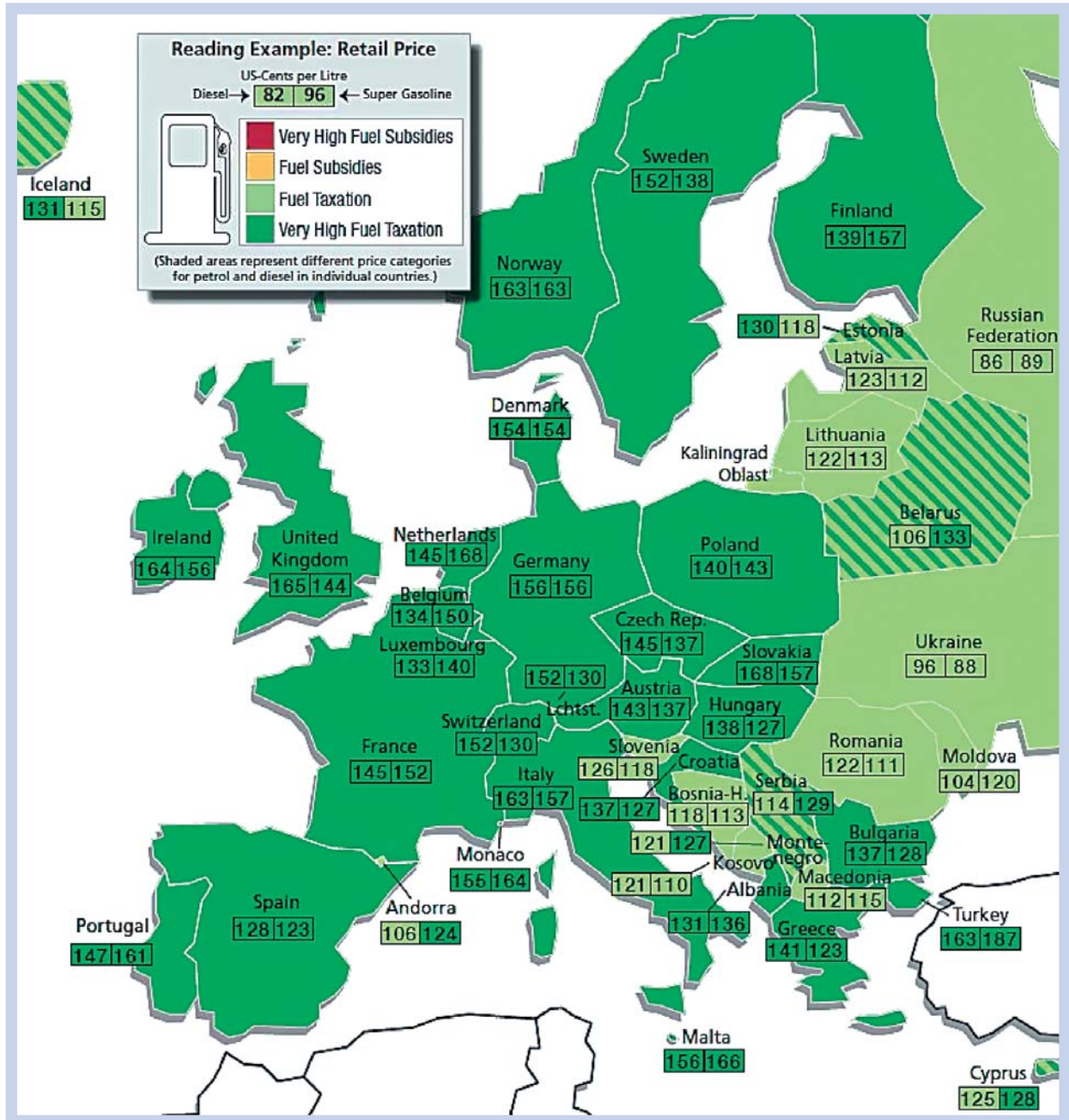
Furthermore, Western Balkan countries lag behind EU practices in energy-efficient transport policies, vehicle taxation, urban transport policies and policies to promote alternative transport options (water, rail, public transport, cycling).

Natural gas

The costs of security of supply of natural gas are not considered here. However, these costs are significant. During the natural gas supply crisis in January 2009 almost all the industries in the region that used natural gas were stalled while

⁴⁵ Bosnia and Herzegovina is also in the process of arranging for exploitation of local crude oil resources.

⁴⁶ In both cases privatization processes have been disputed in public from the transparency and public benefit perspectives.

Picture 1: Comparisons of retail prices for petroleum products

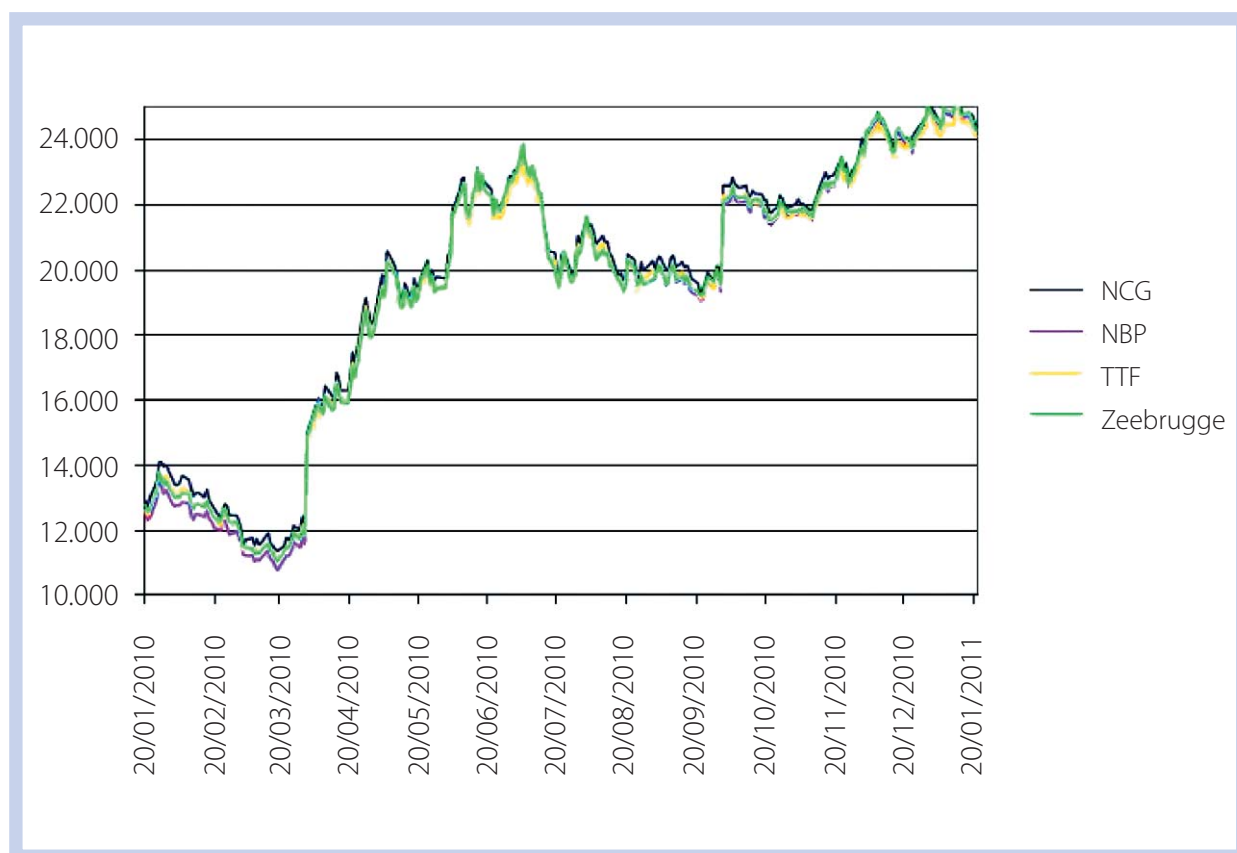
Source: GTZ

countries struggled to maintain the energy supply to the population. They only managed to get through the crisis because of material assistance⁴⁷ from the EU.

The region imports natural gas at higher prices than those of the EU natural gas market. The price formation at four major European gas hubs demonstrates a certain (and expected) conver-

⁴⁷ See Kovacevic, Aleksandar 'The Impact of the Russia-Ukraine Gas crisis in South Eastern Europe', Oxford Institute for Energy Studies, March 2009.

Diagram 3: Season ahead prices for NBP, NCG, TTF and Zeebrugge, January 2010-January 2011
(Euros/MWh)



gence⁴⁸. Diagram 3 summarizes this convergence using season-ahead prices.

However, a comparison between one of these hubs (TTF) and the Platts North West Europe Gas Contract Indicator (NEW GCI)⁴⁹ reveals considerable and long-term discrepancy between these two price formation systems as indicated in Table 7.

Long-term oil indexed gas contracts establish a price formation mechanism that is not related to

an actual supply and demand situation. It is linked to oil prices with a certain time lag. Consequently gas prices to industry are not responsive to industrial demand and eventual fluctuations in prices of industrial outputs. In the case of the Western Balkans, energy-intensive industries are selling to international commodity markets (aluminum, sugar, rubber, copper, steel, fertilizers, etc.) where price formation is determined by much larger supply and demand interactions. There are possible frictions between the price of gas (at cost side) and the sales prices

⁴⁸ Diagram and table from: ICIS-Heren in Stern, Jonathan and Howard Rogers, 'The Transition to Hub-Based Pricing in Continental Europe', Paper NG49, Oxford Institute for Energy Studies, March 2011.

⁴⁹ Long-term contract oil indexed gas prices in Central and South Eastern Europe are entirely non-transparent. Therefore, NEW GCI is used as the best available proxy. Natural gas prices in the Western Balkans are even higher than this indication as most of Central European countries are members of the EU and are gas transit countries with a certain leverage to enable somewhat better contract terms. Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia and Serbia are at the end of transport routes without major transit flows, with very little if any gas storage capacity that could be used not only to enhance security of supply but also to tide them over between time periods with different prices and with major seasonal demand fluctuation that makes them vulnerable to monopolistic behavior on the supply side.

Table 7: European spot gas prices as percentage of oil-indexed gas prices in Euro/MWh

	TTF average	NWE GCI	TTF/GCI %
January 2011	22.24	25.84	86
December 2010	24.15	26.13	92
November 2010	19.50	25.98	75
October 2010	18.56	25.54	73
September 2010	18.95	25.07	76
August 2010	18.12	24.21	75
July 2010	19.52	23.55	83
June 2010	19.28	22.62	85
May 2010	16.78	21.80	77
April 2010	13.53	21.56	63
March 2010	11.99	21.00	57
February 2010	13.72	20.74	66
January 2010	14.48	20.02	72
Average 2010	17.38	23.19	75

Source: Platts European Gas Daily: monthly averages, January 2011, p.2.

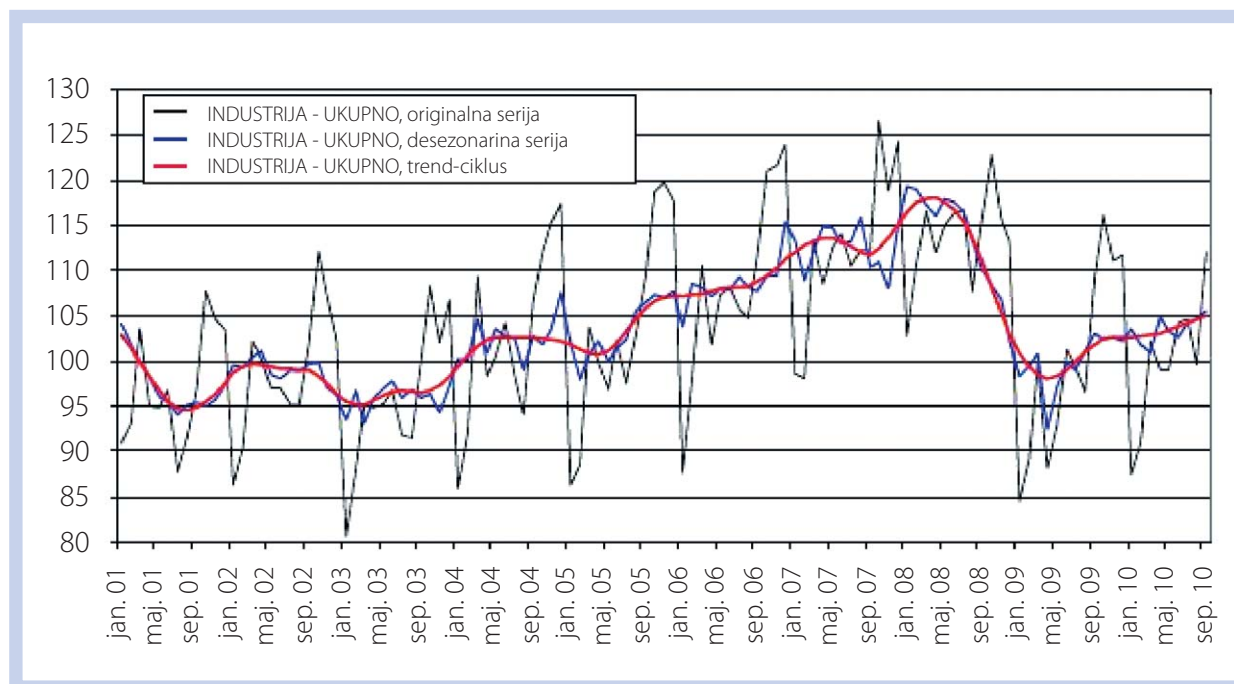
Note: the Table shows TTF day-ahead prices compared with the Platts North West Europe Gas Contract indicator (NWE GCI) which indicates a typical price for long term oil-indexed supplies. The final column shows TTF as a percentage of NWE GCI.

of industrial products as gas prices are not market based. Therefore, industry periodically finds itself running into problems when margins are not sufficient even to maintain minimal functioning. In order to maintain industrial functioning, domestic governments are forced to subsidize the industry through other forms of energy, notably electricity, which is deemed to be a domestic product the costs for which can be delayed. Countries where natural gas supply to the main export industry does not exist (Albania, the former Yugoslav Republic of Macedonia) demonstrate further industrial energy price elasticity.

The following graph indicates monthly industrial output in Serbia. Winter contractions in industrial

output (mostly the food processing industry, metals, rubber, plastics, etc.) are linked to a shortage in natural gas supply during periods when most of available capacity is allocated to district heating systems and household consumption (demonstrated by the black line). Industry is therefore exposed to a problem of security of supply. Overall industrial output trends (red line) are more linked with financial situation and demand. There is little elasticity between gas prices and industrial output. For example, during the financial crisis in 2008, gas prices remained high for such a long period of time that it dragged industrial output down by the end of 2008. Industrial production actually dropped only during gas crisis in January 2009 when the gas supply was physically blocked.

Diagram 4: Industrial Production 2001-2010 (index, 2009 = 100)



Source: Economic Institute, Serbia Chamber of Commerce, *Monthly Analyses and Trends*, No. 192, October 2010, Belgrade.

This case demonstrates the strength of the compensatory effect of subsidized electricity prices that allow industry to sustain production despite adverse fluctuations in gas prices.

Taking into account the excessive winter demand for natural gas and the limits of transport capacity it is to be noticed that during peak demand periods the gas transport infrastructure is loaded to maximum while overall annual capacity utilization is typically below 1/3. This creates a significant cost burden as the entire infrastructure, regardless of its fixed high costs, is to be allocated to process much less than the actual capacity.

In total, high gas purchase prices are supplemented with high infrastructure costs, burdened with security of supply costs and accompanied with high trade margins of monopoly suppliers delivered to customers. Customers have to share the economic burden related to security of supply, that is, to maintain alternative energy supply options and pay for

their low utilization rates. In return, customers are compensated by relatively low electricity prices (in comparison with the actual high cost of electricity supplies).

State-owned industry has been ordered to arrange for alternative energy supplies at its own expense. Some privatized companies have inherited these alternative facilities. However, de novo private industry is not in the position to arrange for its own security of supply options and retain competitiveness. This is curbing the possibility for the re-industrialization of the region and the emergence of new employment opportunities.

Lignite and coal

There is little coal available in the region. Lignite is the most widespread local fossil fuel in terms of volume. The region uses almost 80 million tons of lignite per year. In addition to environmental im-

pacts, lignite mines require direct assistance from public funds due to low productivity and over-staffing.

Further increases in the cost of lignite extraction are to be expected throughout region due to diminishing resources (overburden-to-lignite ratio) and the exploitation of resources that are located in areas with a higher density of population and economic activity.

The prolonged use of lignite and the eventual increase in annual volume creates further risks of excessive external CO₂ costs. The region will soon have access to EU emissions trading and climate change mechanisms. Therefore, these additional costs need to be taken into account in electricity prices and lignite prices. This is also the case with costs arising from application of the EU Large Combustion Plant Directive that is already envisaged within the framework of the Energy Community Treaty. Lower quality lignite is likely to facilitate further abatement costs. More complex abatement technology will increase the complexity of plants, decrease utilization rates, and increase fixed costs per unit of electricity while increasing consumption of electricity. This will bring about massive costs in terms of climate change. If this process is fully reflected in end prices of electricity, applying the full long-term marginal cost rule, the total cost of electricity could become excessively high. As a consequence, electricity can no longer be used to compensate industry for high natural gas prices and to facilitate the functioning of inefficient and poor quality district heating systems. Thus, the entire complex subsidy structure could decompose creating a massive industrial breakdown and social unrest.

This is the reason why the environmental costs already envisaged by the EU Environmental Acquis

are, in fact, a critical subsidy mechanism. From another perspective, if technology, energy efficiency and shifts to renewable energy, and compensation during the current fiscal year are not employed, the environmental costs will be high, cumulating over time and creating additional burdens (associated health problems, soil pollution, land degradation, etc.) for future economic revival.

District heating

District heating services in the region are based on burning fossil fuels⁵⁰. Considering the number of degree days, the weather sensitivity of building stock and the fluctuation of winter temperatures the utilization of district heating capacity remains very low – less than 1,000 hours per year of equivalent utilization. Fixed costs per unit of heat are high, but district heating systems have an impact on the utilization of the gas and electricity infrastructure. High capital costs can not be covered by heating prices that are competitive with regard to alternative heat sources, while the practice of variable temperature heat distribution management impacts on the longevity of equipment and functioning of the system. Most of the customers do not consider district heating to be a secure heating option so they maintain alternative heating capacity and do not use domestic hot water from the district heating system (decreasing utilization rates even further). Municipal administrations are covering part of costs from the public budget⁵¹ and facilitate non-payment or delayed payments for fuel. Such use of district heating systems creates periodical demand hikes on electricity or natural gas grids. However, the most striking loss is the opportunity cost of burning high-quality fuel (in pure energy terms) to produce low-grade heat and missing an opportunity to generate electricity or motion. The loss of produc-

⁵⁰ There are minor exceptions including a small district heating system in Kocani (the former Yugoslav Republic of Macedonia) that uses geothermal energy and few small biomass-fired installations.

⁵¹ Only the most efficient systems in the region (Skopje, Obrenovac) are an exception of this rule.

tivity that emerges from that process is entirely covered by public resources and not reflected in the national budget. Countries are paying for fossil fuels while not generating added value and employment opportunities that are normally associated with such fossil fuel consumption.

Electricity

About 2/3 of electricity in the region are generated from fossil fuels and the main generators are vertically- integrated state-owned companies. These companies were mostly formed at the beginning of the 1990s through the nationalization and integration of many companies that were involved in the electricity market in the Former Yugoslavia. Horizontal integration allowed for the creation of average prices between hydro and thermal power plants. Vertical integration with the electricity distribution allowed companies to abolish the relatively strict demand side management imposed by electricity distributors that had been buying electricity and capacity from the market during the 1980s. Capacity is now provided by domestic hydro power plants. This practice halted some fossil fuel imports for household heating purposes and district heating but created massive opportunity costs in removing hydro power plants from the European market where

peak power gains premium prices. At the same time, use of some power plants is curbed by cross-border disputes between jurisdictions so plants are not in a position to develop and market their full technical potential.

Lignite-fired power plants use costly domestic lignite while other thermal plants use over-priced imported fossil fuels. Generation efficiency is generally below European average. This process necessarily results in electricity that is more expensive than that on the rest of the European market. Part of that electricity is wasted in network losses and tolerated non-payment. Most excessive network losses occur during peak demand periods when networks are overloaded. All utilities in the region are trying to cope by investing scarce investment resources and loans in network reinforcements that might not be necessary once demand side management and energy efficiency are introduced properly. As a consequence, even if electricity is priced comparably to European prices, it does not cover all direct costs. In addition to that, domestic utilities are not practicing environmental protection standards that are already imposed on EU companies. Loss of productivity and employment due to reallocation of available electricity from productive use in industry toward household consumption is also to be noted.

6 : Conclusions

A very small proportion of fossil fuel subsidies in Western Balkan countries is actually reported in the national budget. Sources of subsidies are the national budget, cross-subsidies from hydro power resources to fossil fuel power generation, environmental impacts, uncovered security of supply risks, neglected maintenance, neglected replacement and non-payment to foreign suppliers. Hidden subsidies in the form of environmental damage are significant and cumulative. Cumulating of expenses over time creates further and unpredictable fiscal risks that could erupt far beyond any expectations. Policies should be upgraded with a view to working toward the EU Environmental Acquis, envisaged within the Energy Community Treaty, to prevent further fiscal risks.

Fossil fuel subsidies serve as an effective barrier that is delaying foreign investment. Investment and openness to international trade are critical for any climate change mitigation plan, as is the phasing-out of fossil fuel subsidies. This practice has the potential to multiply climate change mitigation costs five times in terms of proportion of GDP – from about 5% to about 25% of GDP.

Prolongation of the massive use of lignite in the region increases the risks of a massive increase in extraction costs in the future due to lower-quality resources and further impact on the population and economic activity.

The multitude of fossil fuel subsidies hides the low productivity of the energy industry. However, low

productivity of lignite extraction in energy terms, low quality of energy conversion in district heating systems, inadequate demand side management (including pricing policies) and lack of energy-efficient transport and urban planning policies are preventing the improvement in the quality of GDP growth. International prices of fossil fuels and energy services based on fossil fuels are not a sufficient benchmark as full fossil fuel prices in this region have to reflect critical inefficiencies in order to provide an appropriate signal for public policy. Even when local prices are higher than international prices, it is not sure that all expenses are covered and subsidies might be involved.

Fossil fuel subsidies in the Western Balkans are a coherent system that supports energy-intensive industry, exports, employment, trade balances and the shaping of GDP on the expense of sustainable development by increasing significant risks in fiscal, political, and environmental terms. There is an accumulation of risks the cumulative stock of which is already so large that it requires a special set of policies to manage them.

Fossil fuel subsidies can not be phased out by the simple introduction of marginal costs into energy price formation. It requires intervention in the energy infrastructure, industrial structures, corporate governance, fiscal structures, welfare policies, energy efficiency of industry as well as cross-border arrangements between the countries in the region and between the region and the rest of Europe.

A decisive and tailor-made policy to introduce renewable energy into the Western Balkans is to be considered as a major tool to eradicate problems with fossil fuels subsidies. However, it can not be based on fiscal stimulus only, due to the fragility of fiscal systems and the nature of available institutions. There is a need for institutional restructuring in order to support the emergence of a viable renewable energy industry. In this region this process is far more

important than the eradication of climate change risks and should be guided with far more ambitious objectives than elsewhere in Europe.

In similar manner, there is a requirement for comprehensive national energy efficiency policies to eradicate excessive energy consumption and structural inefficiencies and to ensure that the energy needs of the poor are not forgotten⁵².

⁵² See The World Bank, 'Status of the Energy efficiency in the Western Balkans – Stock taking Report', June 15, 2011, Washington D.C., www.energy-community.org

7 : Recommendations

Fossil fuel subsidies in the Western Balkans should be considered from the perspective of their total costs, including all costs indicated in this report. Once a framework for the entire costs of fossil fuel subsidies is established (including appropriate methodology to assess environmental impacts in detail), bearing in mind the cumulative effects of some costs, a formal assessment of fossil fuel subsidies could be applied.

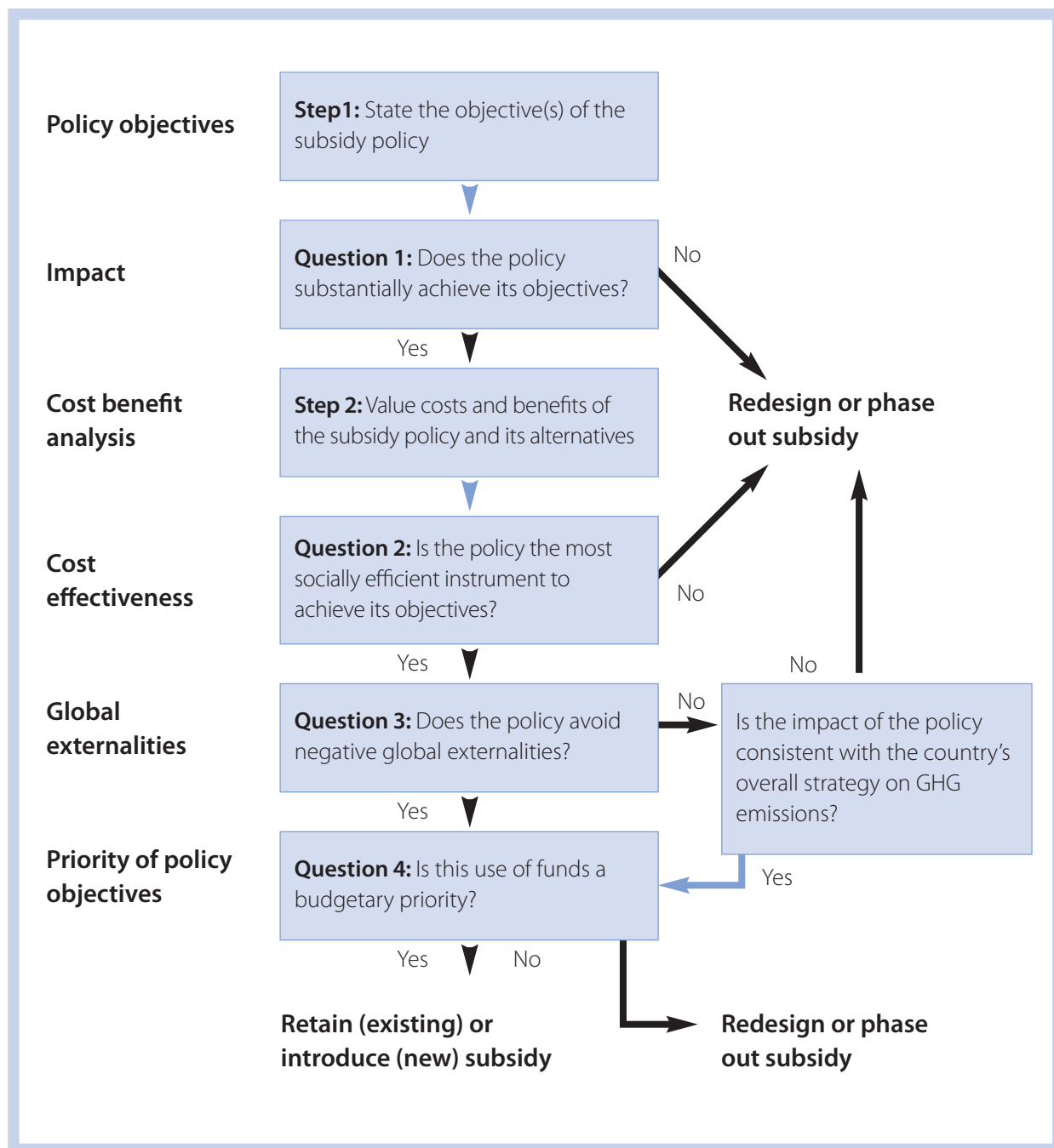
The World Bank and other international institutions suggest a process to assess fossil fuel subsidies that is usually presented in the form of decision tree. A sample decision tree could be considered as follows:

All countries in the region should consider accession to the EITI in order to increase the transparency of fossil fuel extraction process.

The goal of these exercises would be the fundamental reform of energy subsidies and the removal of all subsidies that are not in line with the EU Standards on State Aid. However, this cannot be done while fossil fuel prices are increasing. The countries in the region could consider the following sequence of action to reform subsidies and phase out those that have not passed the test above:

1. Make subsidies abundant by strategically improving energy efficiency, fuel switching, restructuring of energy security arrangements and long-term contracts, more economical use of energy resources, introduction of renewable energy, etc. This will bring in competition in energy services and make the incumbent industry more open to accept more transparent, cash-based subsidies that will be fully reported in the national budgets.
2. Provide transparency in the cost and purpose of fossil fuel subsidies: improve energy, environment and fiscal statistics, improve public participation in line with the Aarhus Convention, address subsidies at the appropriate level of administration and provide for a clear distinction of responsibilities, etc.
3. Provide a better link between regional and national transport policy and regional and national energy policy in order to open not only energy markets but also markets of energy-intensive goods (fertilizers, aluminum, copper, steel, metallurgy products) in order to increase exposure to international markets. Being further exposed to international competition, some energy-intensive industries could chase operation or improve their energy efficiency, which would decrease energy demand and consequently decrease the volume of subsidy.
4. Address energy poverty by direct assistance to the poor to improve their energy efficiency. This policy could decrease the energy expenditure of the poor while decreasing the overall energy demand increasing elasticity of supply further. Use direct assistance to the poor to facilitate economy of mass production of energy-efficient solid fuel stoves and solar water heating devices in the region.

Picture 2: Schematic Approach to Assessing Energy Subsidies



Source: Background Paper for the World Bank Group Energy Sector Strategy, Subsidies in the Energy Sector: An Overview, World Bank, July 2010

5. Address excessive peaks in electricity consumption during cold weather in winter (and hot weather in summer) by improving the energy efficiency of energy poor households and public buildings and the functioning of district heating systems, and through demand side

management, appropriate tariff structures and targeted use of renewable energy. As most of electricity network losses occur during peak demand periods, reducing peaks will reduce losses and improve revenue-generating process while decreasing the burning of fossil fuels.

6. Hydro energy in the region is a viable competitive source of energy. It is under-utilized due to cross-border disputes between jurisdictions. Region-wide arrangements with regard to hydro resources (both existing hydro power plant use and the potential for new developments) could increase the availability and effects of hydro power creating viable competition to fossil fuels. Separating hydro power production from thermal power production and allowing its full commercialization could follow the regional agreement.
7. Introduce appropriate royalty payment for the use of hydro resources in existing hydro power plants to prevent cross-subsidy between hydro and thermal electricity and to motivate the most effective use of these resources.
8. The region has massive biomass resources. Providing an appropriate property rights framework and introducing new ownership structures could enhance productivity in agriculture and forestry. Forestation related to erosion protection and land/forest restoration is to be considered also from the perspective of energy production. Co-firing of agriculture biomass with lignite is to be considered as a short term option. In the longer term, massive use of biomass for heating and electricity generation could be considered. This process opens up prospects for viable competition to most polluting fossil fuels and increases elasticity of supply.
9. Sum up and disclose outstanding debts to foreign fossil fuel suppliers and report on the security of supply impacts these outstanding debts might have. These outstanding debts are to be considered within the framework of other national debts and acknowledged by the IMF and other relevant institutions.
10. Consider cumulative environmental impacts of fossil fuel production (notably lignite) and develop tools to manage and eventually eradicate risks arising from that process. Full implementation of the EU Environmental Aquis envisaged by the Energy Community Treaty remains critical.
11. Introduce appropriate demand side management in electricity and heat distribution while improving metering, billing and collection. Specialized metering and billing services could be provided separately from distribution services in order to bring in the most modern technologies and facilitate supply competition in line with the Energy Community Treaty.
12. Increase excise and VAT taxes to liquid fossil fuels to levels comparable with EU countries and facilitate market entry to the wholesale petroleum products market by allowing custom-free storage and improving railway links to Adriatic ports. Increase royalty payments for domestically-produced crude oil (natural gas and condensate) to internationally comparable levels.
13. Improve public transport services including emergency health assistance, suburban transport and urban transport. Provide access to appropriate mobility to the poor, including vouchers for public transport and the provision of bicycles.
14. Restructure all district heating systems in the region to make use of geothermal energy, biomass or waste heat in order to eliminate entirely the use of fossil fuels. Such a restructuring process should comprise a massive improvement in energy efficiency of district heating systems and heat delivery in order to remove the need for subsidies and dependence on imported fossil fuels. The corporativization of district heating companies should include solutions for their outstanding debts and neglected maintenance.
15. Increased royalty payments for hydro resources and crude oil (natural gas and condensates) and further excise taxes for petroleum products (alternatively, vehicles or fuel stations) are to be considered as additional budget revenues suitable to facilitate not only energy poverty reduction and targeted energy subsidies but also as investment in the energy infrastructure and renewable energy.

16. Reconsider the mandate of energy efficiency agencies in order to refocus them from direct project involvement toward policy co-ordination between fiscal, transport, spatial and urban planning and energy policies.
17. Empower customer organizations to become partners in the policy process.
18. Support the re-emergence of regional professional associations in energy efficiency and related fields in order to inform public dialogue and deepen policy application.
19. Countries could consider broadening their participation in the Energy Community Treaty process in order to involve fiscal authorities, legislative, judicial and civil stakeholders into the process. The law on implementation of the Energy Community Treaty could be considered as an appropriate tool.
20. Effective administration of public goods and state ownership is critical to understanding the impact and size of fossil fuel subsidies. Specialized and separate government institutions could be established or upgraded to focus on management of public goods and state ownership. In some countries, constitutional reforms could be required to facilitate the focus of these agencies and prevent conflicts of interests.
21. Link the increase in electricity prices (where necessary) to the decrease of actual consumption per household, the decrease of network losses and other measurable indicators of reform.
22. Consider the restructuring of energy subsidies, including tax exemptions, to facilitate development goals such as the introduction of solar water heating, heat pumps, melioration of devastated forests, biomass trade and optimization of land ownership.

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9. Annex 1 : Case studies

In addition to a regular flow of fossil fuel subsidies, countries in the region occasionally undertake action to deliver fossil fuel subsidies beyond regular flow, in many cases, with macroeconomic impacts. These impacts are contained within a certain time or economy sector and not necessarily accounted for in the overall assessment of fossil fuel subsidies.

Some of Case studies⁵³ provided below also provide a primer of the cumulative build-up of fiscal risks in the Western Balkan countries.

Case study 1: Kosovo power utility (KEK)

Following years of insufficient revenue Kosovo power utility (KEK) continues to postpone regular maintenance and replacement of its main physical assets. Table 8 below demonstrates insufficient collection of revenue:

Further to this inadequate billing/collection, KEK was obliged to pay for imported electricity in order to maintain its capability to procure electricity on the regional market. Annual electricity import expenditure could be roughly estimated to be about €50 million per year at variable volumes, structure and prices.

In 2009 KEK managed to collect about €134 million while it accumulated outstanding debt to the Kosovo Government of €157 million over the 2005-2009 period to cover essential financial requirements.

Assuming that total revenue requirements in 2009 were about €163 million it is obvious that KEK accumulated considerable deferred maintenance costs. As a result, it accumulated a failure risk for the most critical equipment as displayed in Table 9.

Table 8: Electricity sales and collection in Kosovo

	2006	2007	2008	2009
Billed as % of energy available	60%	70%	80%	80%
Collection as % billed	74%	77%	76%	81%
Effective collection of % of energy available	51%	54%	61%	64%

⁵³ News archives were consulted during a course of research to identify and describe these events involving occasional but significant fossil fuel subsidies.

Table 9: Failure risk accumulation for main assets components

Component	Risk of failure	Expected value of risk
Unit B1 generator rotor (thermal imbalance)	50%	€ 60 million
Unit B2 generator rotor (thermal and dynamic imbalance)	50%	€ 64 million
Unit B1 low pressure turbine rotor (turbine blade cracks)	25%	€ 60 million
Unit B2 low pressure turbine rotor (turbine blade cracks)	40%	€ 96 million
Unit B1 auxiliary transformer	60%	€ 3 million
Unit B2 main transformer	60%	€ 121 million
Unit A3/A5 main transformer	40%	€ 34 million
Palaj Substation (serving the mines)	30%	€ 41 million

Case study 2: Lignite mining in Serbia

Not taking into account stranded costs from previous years, two major lignite mines in Kostolac and Kolubara demonstrated the following performance⁵⁴ over the 2005–2010 period⁵⁵:

Despite a more than twofold increase in annual overburden removal (in comparison with 2001) versus about a 20% increase in annual lignite extraction during the same period, mines had more than one full annual overburden removal requirement in addition to business-as-usual accomplishments.

Table 10: Overview of lignite mining in Serbia

	2005	2006	2007	2008	2009	2010
Lignite extraction	34.46	36.07	36.51	37.95	37.78	37.19
Overburden removal	92.52	97.15	108.04	107.25	98.26	95.78
Actual overburden to lignite rate	2.68	2.69	2.96	2.83	2.60	2.58
Required removal at historical sustainable rate	120.61	126.25	127.79	132.83	132.23	130.17
Overburden removal deficit	28.09	29.10	19.75	25.58	33.97	34.39
Cumulative deficit	28.09	57.19	76.94	102.52	136.49	170.88

⁵⁴ In millions of metric tons of material.

⁵⁵ EPS, Annual Technical Report for 2010, Belgrade 2011, and various reports on lignite mining in Kolubara and Kostolac mines. Data here are used only for demonstration purposes and not intended for detailed planning or technical assessment.

The availability of resources, internal organization, access to land to extend open pits, need for up-front funding to move infrastructure and human settlements contributed to this delay even though mines are equipped with the appropriate capacity of machinery and staff to perform designated overburden removal. However, a large part of these extraordinary cumulated costs are likely to be financed from public funds that will require €340-600 million over about five years.

Taking into consideration the depth, scope and quality of available lignite resources, additional expenditure is not likely to result in decreased unit cost of energy but to a further increase.

Case study 3: Oil products trade between Montenegro and Kosovo

The regional energy news Internet portal Energetika.net reported on May 5, 2011 on the oil products trade between Montenegro and Kosovo. At the border crossing in Rozaje-Kula between Montenegro and Kosovo, 3,334 oil tankers were accounted as exports from Montenegro of which 1,675 vehicles did not enter Kosovo during the period between 2005 and 2009. During that period, Montenegro's budget suffered damages of at least €20 million due to non-payment of excise tax, custom duties and VAT. In 2007, duties for more than 10 million liters of fuel had not been paid in Montenegro.

Case study 4: Kosovo coal imports

During the first eight months of 2010, Kosovo imported 61,200 tons of coal from Indonesia. In addition to that, Kosovo was importing coal from the former Yugoslav Republic of Macedonia, Montenegro, Serbia, Bulgaria, Bosnia and other countries to total of over 71,000 tons. The main importer was Feronikel, although there are significant do-

mestic lignite resources. A company spokesman confirmed imports and explained that Kosovo's vertically-integrated energy corporation KEK 'cannot provide enough coal for factory needs'.

Case study 5: Direct electricity subsidies and non-payment in Serbia

By July 2010, during the first six months of the year outstanding debts to Serbia's electricity utility company EPS increased by 12% in comparison with same period in 2009. Overall outstanding debt came to a total of approximately €650 million. The chairman of the board noted that if EPS was selling electricity at market prices (while not specifying the reference price) it would be generation €384 million more revenues annually. In the same period, only 22,000 consumers out of 107,000 eligible socially disadvantaged consumers, applied for an electricity discount. For that purpose the EPS allocated only €57,000 per month.

Case study 6: Electricity for aluminum smelters

At the beginning of July 2011, Croatia electricity utility company HEP signed a contract to supply electricity for aluminum smelter in Mostar (Bosnia and Herzegovina). In return, Mostar aluminum smelter is due to supply 60,000 tons of aluminum for TLM aluminum processing in Croatia at a fixed price. Electricity supply is contracted at €42.75/MWh. The regular price of electricity in Croatia to large industrial consumers is €48-52/MWh depending on voltage level while the regional market price for electricity is €55-60/MWh. TLM exports aluminum products via resellers which causes net losses in company financial reports even though international aluminum prices are fairly high. The previous management of HEP was accused year ago for losses of slightly less than €100 million trading electricity in a similar

manner, although in somewhat different legal circumstances. HEP is a net importer of electricity.

Montenegro's electricity utility EPCG supplies electricity to Podgorica aluminum smelter company KAP, owned by Rusal of Russia at agreed prices following the privatization of that company prior to 2006. EPCG agrees with certain profit sharing with KAP based on international aluminum prices. From period to period, the Government of Montenegro was covering differences between electricity prices for supplies to KAP and regulated cost covering prices. EPCG has made a number of claims on outstanding electricity payments from KAP over the years.

Case Study 7: Heavy fuel oil for district heating from national reserve stocks

During the winter of 2009-2010 the Government of Serbia provided heavy fuel oil from national reserves to some district heating companies in Serbia. Companies are obliged to buy heavy fuel and replenish reserve stock in natura. This undertaking was not reflected in the budgetary accounting. Most companies were unable to deliver fuel back to reserve stocks while some companies applied for the same assistance during following winter.

10. Annex 2 : Country descriptions

Application of the overview of forms of government interventions in the energy markets according to the World Bank's background paper for the World Bank Group Energy Sector Strategy to Western Balkan countries. The following types of fossil fuel subsidies are applied throughout the region.

Below is a list and overview of fossil fuel subsidies applicable in respective Western Balkan jurisdictions:

1. *Access to mineral resources*
 - 1.1 Access granted without public tender
 - 1.2 Access without any compensation or compensation below level considered as international standard
 - 1.3 Unlimited, borderless or implicit access to mined resources
 - 1.4 Refrain from Extraction Industry Transparency Initiative participation
2. *Access to environmental public goods*
 - 2.1 Lack of qualified and informed public discussion including public participation on alternative use of available public goods
 - 2.2 Missing public tender to regulate access to public goods
 - 2.3 Inadequate compensation for use of public goods (polluter pays principle)
 - 2.4 Relief from compensation to private interests affected by use or misuse of public goods
 - 2.5 Inadequate monitoring to prevent claims
 - 2.6 Cross-border impact on other jurisdictions
- 2.7. Public budget covering costs (health, water, soil or air)
3. *Access to land*
 - 3.1. Grant of state owned land
 - 3.2. Expropriation of private land in favor of fossil fuel production or use
 - 3.3. Limit of property rights (free possession, utilization, disposal) to land
 - 3.4. Urban/spatial planning linked to energy policy documents as a pre-condition for building permits
4. *Rule of law*
 - 4.1. Refrain from international obligations
 - 4.2. Inadequate property rights as barrier to entry
 - 4.3. Bilateral government -to-government agreements favoring certain commercial undertakings or modifying public policy
 - 4.4. Government-to-private/commercial entity contracts granting special rights
 - 4.5. Delay or avoidance of international obligations
 - 4.6. Data collection or availability restrictions and reliability of available data
 - 4.7. Restricted public participation
 - 4.8. Independence/existence of regulatory institutions
5. *Corporate structures*
 - 5.1. Legal confusion between the government and the corporate entity
 - 5.2. Assets owned by the government and used by a corporate entity owned in turn by the government (balansodrzatel)

- 5.3. Mix of revenues/cash flows between government and corporate entity
 - 5.4. Personnel union between government and corporate entity
 - 5.5. Public policy rests with corporate entity
 - 5.6. Inadequate accounting
 - 5.7. Dividend reinvestment within state-owned companies
 6. *Direct material assistance*
 - 6.1. Grant from public budget
 - 6.2. Grant from environmental protection funds or other para-fiscal funds
 - 6.3. Sovereign guarantee
 - 6.4. Cover of regular expenses by international or national public assistance
 - 6.5. Offset of costs
 - 6.6. Grant or loan of fuels from national emergency reserves
 - 6.7. Write-off loans or obligations
 - 6.8. Public investment into related or support infrastructure
 7. *Taxation*
 - 7.1. Tax exemptions and credits
 - 7.2. Tax below international standards
 - 7.3. Implicit tax exemptions
 - 7.4. Tolerated tax evasion
 8. *Prices and collection*
 - 8.1. Discriminatory tariff system
 - 8.2. Low prices not covering costs
 - 8.3. Average pricing
 - 8.4. Pricing of capacity engagement
 - 8.5. Lack of proxy pricing (congestion, road, airport, port, parking)
 - 8.6. Tolerated non-payment
 - 8.7. Write-off of payment obligations
 - 8.8. Cross subsidies
 9. *Competition and investments*
 - 9.1. Low average or below cost pricing as barrier to entry
 - 9.2. Entry restricted by planning permits
 - 9.3. Import ban
 - 9.4. Restriction of cross-border transit capacity
 - 9.5. Restriction of third party access to public infrastructure
 - 9.6. Lack of adequate demand side management
 - 9.7. Restrictions in use of available hydro power resources
 - 9.8. Delay or restrictions in support to renewable energy developments
 - 9.9. Inadequate public participation in decision making
- Country specific descriptions include:*
- description of state aid regulation in the country;
 - main issues regarding fossil fuel subsidies related to various forms of fossil fuels; and
 - applied methods of fossil fuel subsidies that are listed in accordance with the list above;
 - diagram of energy provision to final consumers where key subsidy transactions or processes are marked in red.
- The same structure is provided for each country. Information is based on various reports from the Energy Community Treaty context, media archives, the World Bank, IEA, EBRD or IMF reports and publications as well as the direct observations of the author.

Albania

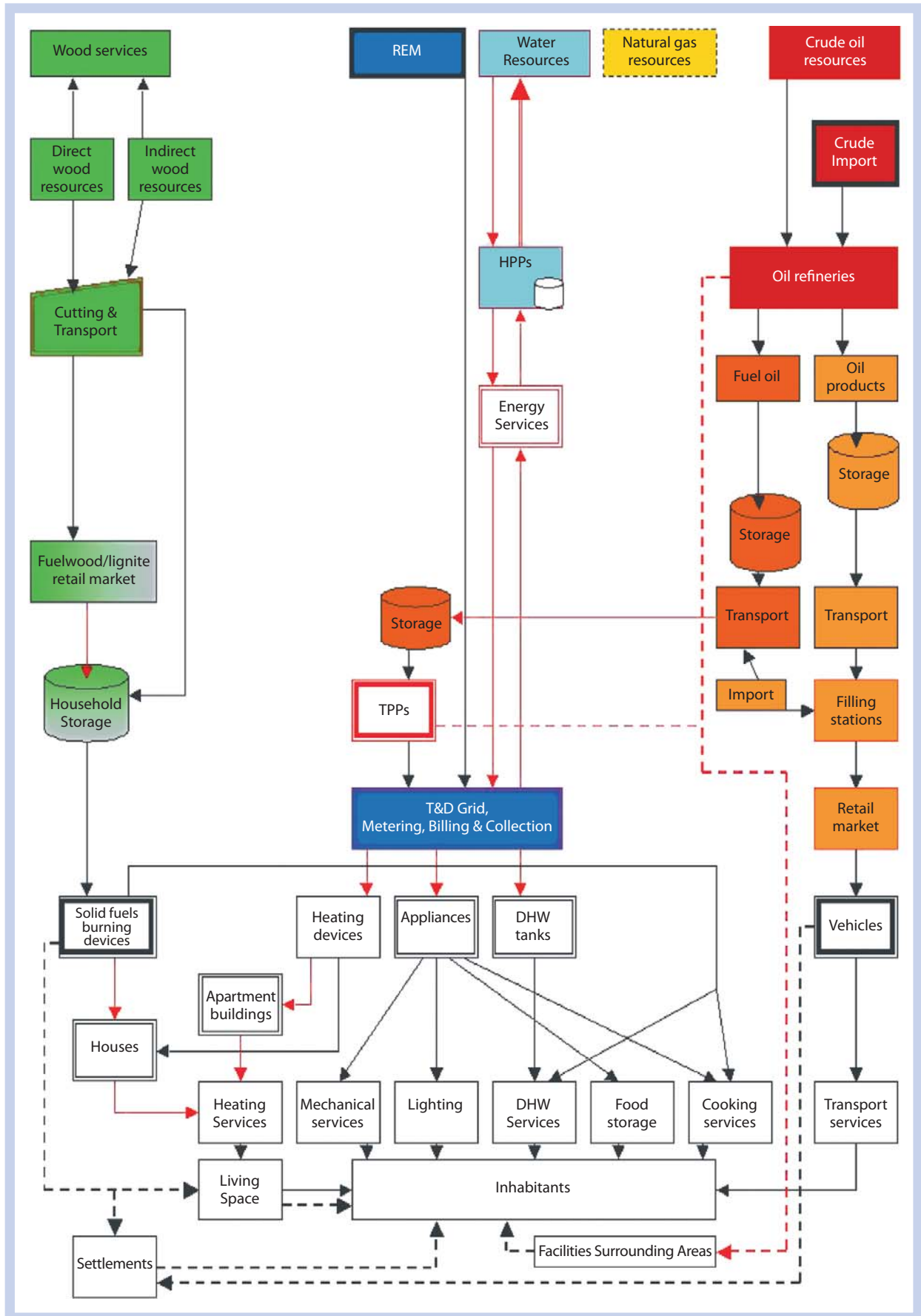
State aid regulations⁵⁶

Features	Notes
Legal framework	Law on State Aid Regulations and guidelines of State Aid Commission, Law on Concessions, Law on Power Sector
General prohibition of state aid	Yes
Identification of stranded costs	No
Institutions	State Aid Sector in the Ministry of Economy, Trade and Energy State Aid Commission – decision-making entity responsible for authorization of state aid
Independence of institutions	State Aid Commission appointed by the Council of Ministers and Chaired by Minister of Economy
Transparency	Good
Public support measures	Excise, tax exemption for fuel oil for power generation VAT exemption for imported equipment for power utility for period of 12 months

Note: Albania is the only country in the Western Balkans that has applied to the Extractive Industries Transparency Initiative

Fossil fuel	Main subsidy issue
Lignite	NA
Coal	NA
Crude oil	Access to mineral resources. Albania applied to the EITI framework.
Natural gas	NA
Oil products	No major issues. Oil products are sold according to Mediterranean Market Price Formations.
Electricity	Most of electricity produced from hydropower. Opportunity costs not taken into consideration. Low generation price is used as a cross-subsidy for an electricity distribution service that appears to be very expensive with a large share in the nominal final price of electricity. However, a private distribution system operator dills with high distribution losses and a very low collection rate. It seems that a low collection rate is a major mechanism of subsidy to end consumers.
District heating	NA

⁵⁶ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.



Applied methods of subsidies

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	n.a.	n.a.	1	1	n.a.	n.a.	n.a.
Environmental public goods	n.a.	n.a.	1	1	1, 2	1, 3, 4, 6	n.a.
Access to land	n.a.	n.a.					n.a.
Rule of law	n.a.	n.a.		4,		2, 4, 6, 7	n.a.
Corporate structures	n.a.	n.a.				6,	n.a.
Direct assistance	n.a.	n.a.				3	n.a.
Taxation	n.a.	n.a.			1, 2,		n.a.
Prices and collection	n.a.	n.a.			5	1, 2, 3, 4, 6, 7, 8	n.a.
Competition and investments	n.a.	n.a.				1, 2, 4, 6, 7,	n.a.

Bosnia and Herzegovina

State aid regulations⁵⁷

Bosnia and Herzegovina: Republika Srpska

Features	Notes
Legal framework	State Aid Law not implemented yet
General prohibition of state aid	Not yet
Identification of stranded costs	No
Institutions	Commission for Control of State Aid to commercial entities appointed by the government
Independence of institutions	No
Transparency	Minimal
Public support measures	Power utility obliged to sell electricity to some industrial consumers at preferential prices Loans provided by the Investment-Development Bank of Republika Srpska Assistance to consumers of electricity in poor or disadvantaged areas Electricity distribution for newly built households within post war rehabilitation

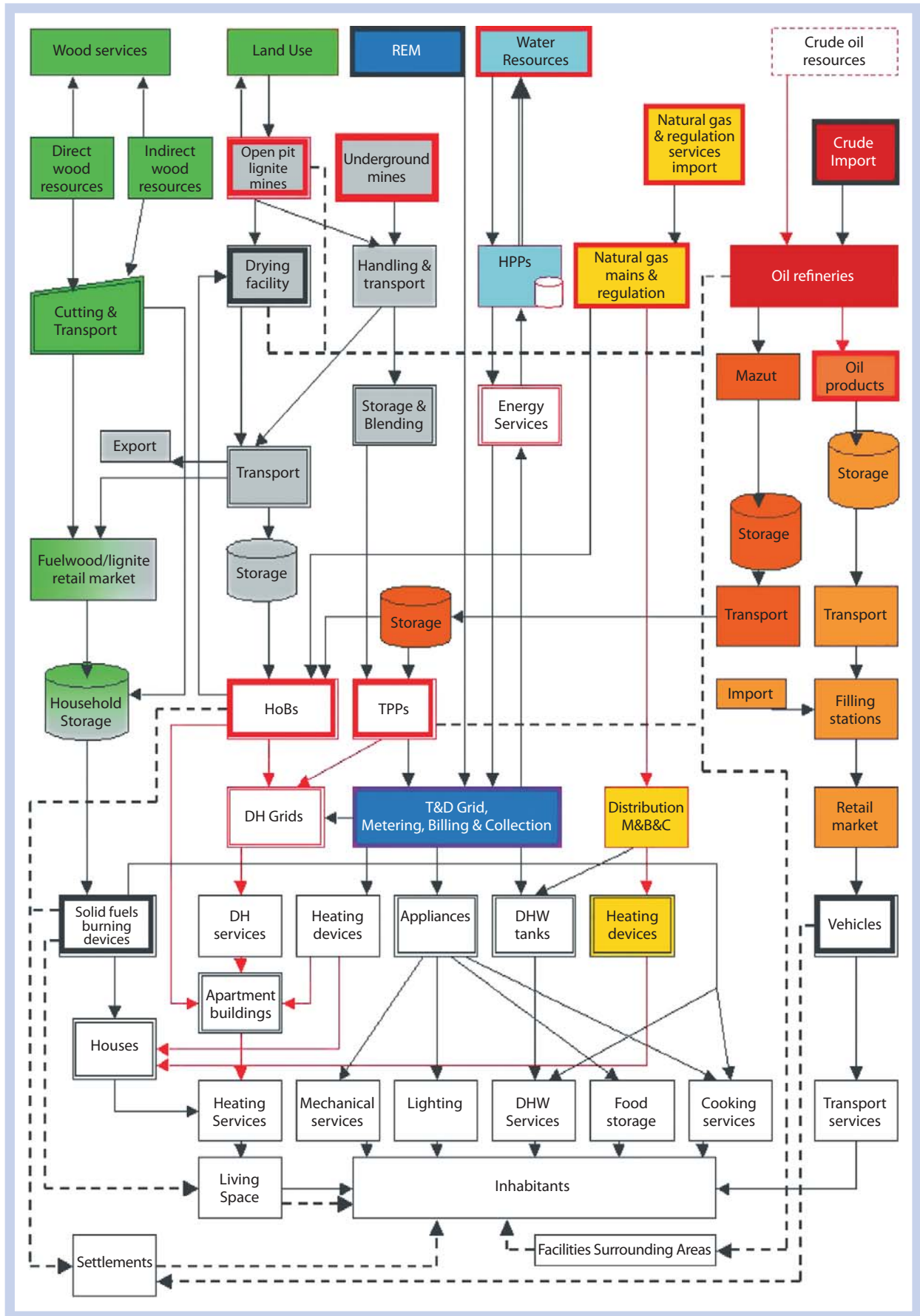
Bosnia and Herzegovina: Federation BiH

Features	Notes
Legal framework	Not yet
General prohibition of state aid	Not yet
Identification of stranded costs	No
Institutions	No
Independence of institutions	Unknown
Transparency	Minimal
Public support measures	Loans provided by the Development Bank of FBiH

⁵⁷ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty'; study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Lignite	Access to mineral resources is priced very low in both Bosnia jurisdictions. Little environmental protection is priced in. Environmental costs and depletion of resources are the main sources of subsidy. Further to that the governments support overstaffing in lignite mines.
Coal	Similar to lignite. To a certain extent coal resources are available in Federation BiH.
Crude oil	Incumbent producer is granted access to mineral resources without public tender.
Natural gas	No major issues
Oil products	Incumbent producer is granted import protection and the right to sell substandard fuel to the domestic market. Low conversion efficiency at the only refinery is compensated by a lower taxation burden.
Electricity	Electricity is according to average prices between electricity produced from hydro resources and lignite power plants. Opportunity costs of hydro-power is not taken into consideration. Environmental costs of lignite-fire generation are not taken into consideration. Environmental impacts of lignite power plants are cumulative. No stranded costs or environmental remediation costs have been announced.
District heating	High costs of district heating services (taking into account very low heat generation efficiency according to the second law of thermodynamics) are offset by direct public subsidies and cross-subsidies of public and commercial consumers towards household consumers. Commercial consumers with very low consumption efficiency and high weather sensitivity are subsidized through lack of capacity charge.

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	1, 2, 3, 4	1, 2, 3, 4	1/	n.a.			
Environmental public goods	1/2/3/4/ 5/6/7/	1/2/3/4/ 5/6/7/			1/2/3/4/5 /6/7/	1/2/3/4/5/6/7/	1/
Access to land	1/2/3/4/	1/2/3/4/					
Rule of law	1/2/4/5/ 6/7/	1/2/4/5/ 6/7/			1/2/3/4/5 /6/7/8	1/2/3/4/5/6/7/	4/
Corporate structures	4/	4/			5/6/	4/	
Direct assistance	1/8/	1/8/			7	1/4/8/	1/4/8/
Taxation					1/2/3/4/	3/4/	
Prices and collection	2/	2/			2/5/	2/3/4/6/7/8/	4/2/
Competition and investments	1/	1/			1/5/8/	1/2/4/9/6/	8/6/



Croatia

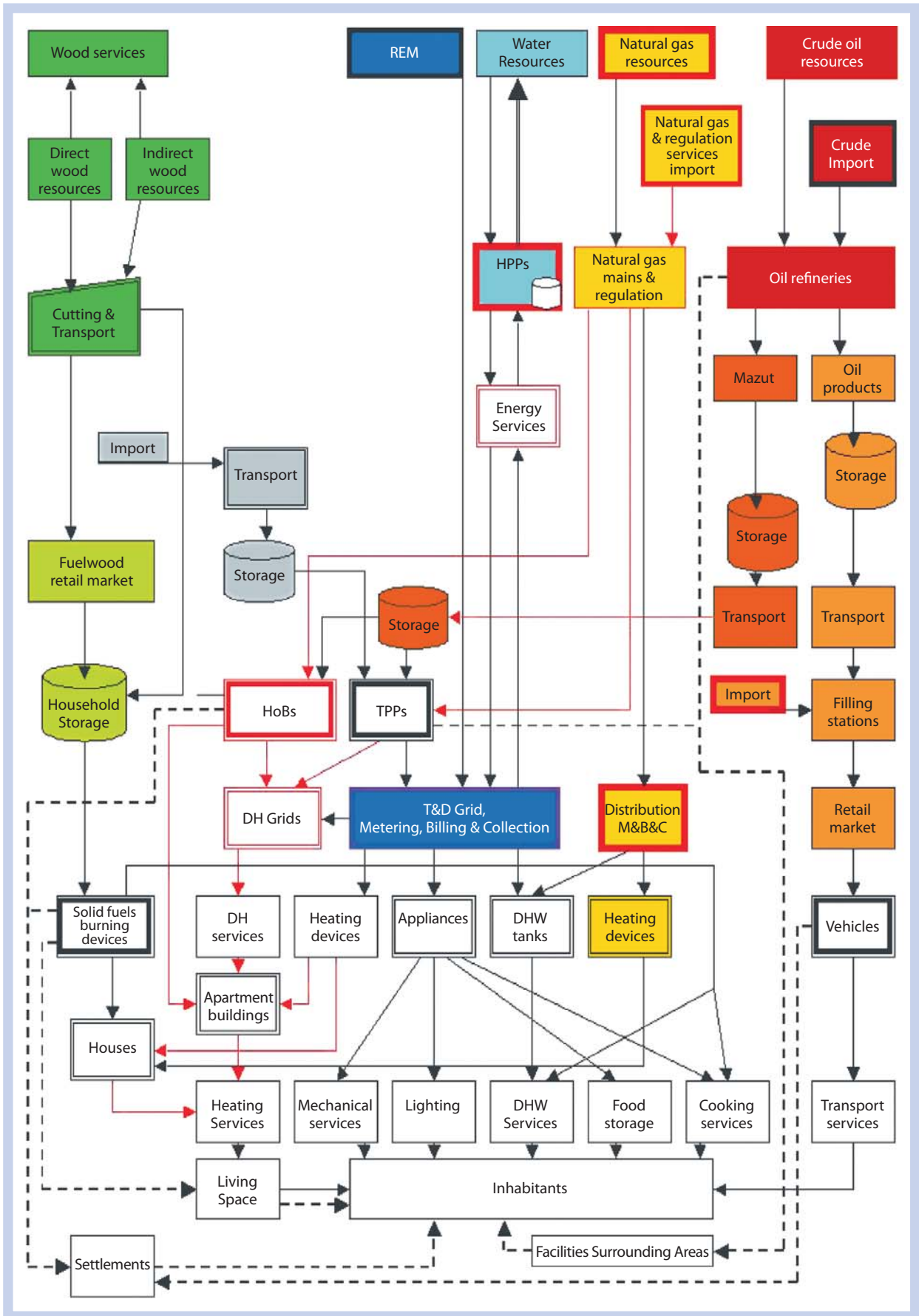
State aid regulations⁵⁸

Features	Notes
Legal framework	State Aid Act, Regulations on State Aid, Act on the Regulation of energy activities
General prohibition of state aid	Yes Exemptions from these prohibitions upon authorization
Identification of stranded costs	No
Institutions	Croatian Competition Agency, Competition Council, State Aid Division of the agency
Independence of institutions	Independent agency
Transparency	Annual Report on State Aid, State Aid Register
Public support measures	Croatian Bank for Reconstruction and Development Loan Program, Sale of electricity from HEP to TLM below market prices, CCA decision to authorize electricity subsidies for small and medium enterprises, State aid for environmental protection

⁵⁸ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Lignite	NA
Coal	Croatia uses only imported coal at international prices.
Crude oil	Low-cost access to mineral resources granted to incumbent producer.
Natural gas	Low-cost access to mineral resources granted to incumbent producer.
Oil products	Low conversion efficiency in two domestic refineries offset by fairly low costs of access to the domestic mineral resources base.
Electricity	Very high cost of electricity generation in gas-fired, heavy fuel oil-fired and coal-fired power plants, mixed with low-cost gas supply, low-cost hydropower (without taking into consideration opportunity costs) and nuclear power. Croatia inherited the right to use a 300 MW capacity nuclear power plant in Slovenia. Croatia is in default with regard to paying its regular contribution to the plant closure fund. Consequently electricity is provided to end customers at nominal prices comparable to EU price levels.
District heating	District heating services are produced at a low level of energy efficiency both from cogeneration and heat-only boilers. District heating prices are competitive with low price natural gas household supplies are maintained by the low cost of gas and direct subsidies as well as cross-subsidies.

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	n.a.	n.a.	1/2/4/	1/2/4/			
Environmental public goods	n.a.	1/2/3/4/5/7	1/3/4/5/7		1/3/4/5/7/	1/3/4/5/7/	1/
Access to land	n.a.	1/	2/3/	2/	2/	4/	
Rule of law	n.a.	1/4/5/6/7/	76//	4/	4/7/	1/4/5/6/7/	4/7/
Corporate structures	n.a.	4/6/	5			4/5/6/	5/
Direct assistance	n.a.	3/				1/3/	1/8/
Taxation	n.a.	2/			2/		
Prices and collection	n.a.	n.a.		2/4/	5	2/3/4/	4/
Competition and investments	n.a.	5		1/2/4/	9	1/2/4/6/7/8/9/	6/



the former Yugoslav Republic of Macedonia

State aid regulations⁵⁹

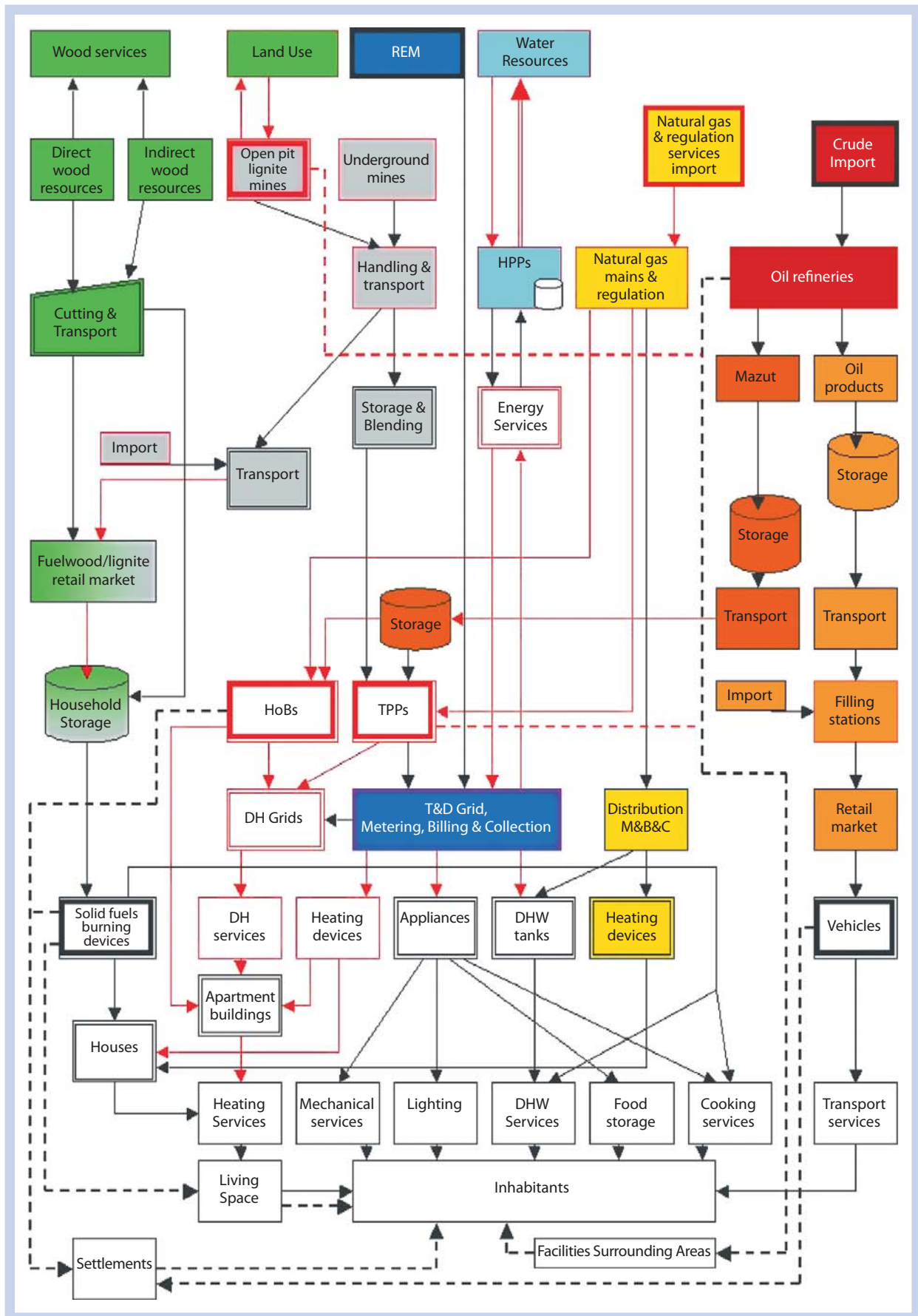
Features	Notes
Legal framework	Law on Control of State Aid, secondary legislation, Energy Law
General prohibition of state aid	Yes
Identification of stranded costs	No
Institutions	Commission for Protection of Competiton, Department of State Aid Control
Independence of institutions	Independent legal entity elected by the parliament
Transparency	Annual report to the parliament
Public support measures	Subsidized assistance to electricity consumers in poor or disadvantage areas: 58,000 households, €10 per month, Assistance to power producers promoting waste management of energy efficiency Guarantees on loans to public companies in the electricity sector, Preferential rights for public companies with regard to the concession agreements

Fossil fuel	Main subsidy issue
Lignite	Access to mineral resources priced very low in the former Yugoslav Republic of Macedonia. Little environmental protection is priced in. Environmental costs and depletion of resources are the main sources of subsidies. Furthermore, the government supports overstaffing in lignite mines. Depletion of available resources is a critical issue in the former Yugoslav Republic of Macedonia
Coal	NA
Crude oil	NA
Natural gas	No major issues
Oil products	Domestic producer was granted a special position as the government agreed to purchase heavy residuals from the only low conversion efficiency refinery. Dispute between foreign owner of the refinery and government was recorded.

⁵⁹ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty'; study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Electricity	Electricity is priced according to average prices between electricity produced from hydro resources and lignite power plants. Opportunity costs of hydro-electric power are not taken into consideration. Environmental costs of lignite-fire generation are not taken into consideration. Environmental impacts of lignite power plants are cumulative. No stranded costs or environmental remediation costs have been announced.
District heating	District heating is available only in the capital city of Skopje. Services are provided by private operators. High costs of district heating services (in particular standby capacity to cover volatile weather impacts) are offset by low capital engagement, cross-subsidies and the low price of electricity to household consumers.

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	1/2/3/4	n.a.	n.a.	n.a.			
Environmental public goods	1/2/3/4/5/7	n.a.	n.a.		1/2/3/4/5/7/	1/3/4/5/6/7/	1/
Access to land	2	n.a.	n.a.	1/2/			
Rule of law	1/4/5/6/7/	n.a.		3/4/7	4/5/6/7/	1/5/6/7/	4/6/
Corporate structures	5	n.a.				4/5/	5
Direct assistance	1/	n.a.		1/8/	3	3/8/	
Taxation		n.a.			2		
Prices and collection	2	n.a.		4	5	2/3/4/6/	4/
Competition and investments	1/	n.a.		4/6/9	1/6/9	1/2/4/6/9	6



Montenegro

State aid regulations⁶⁰

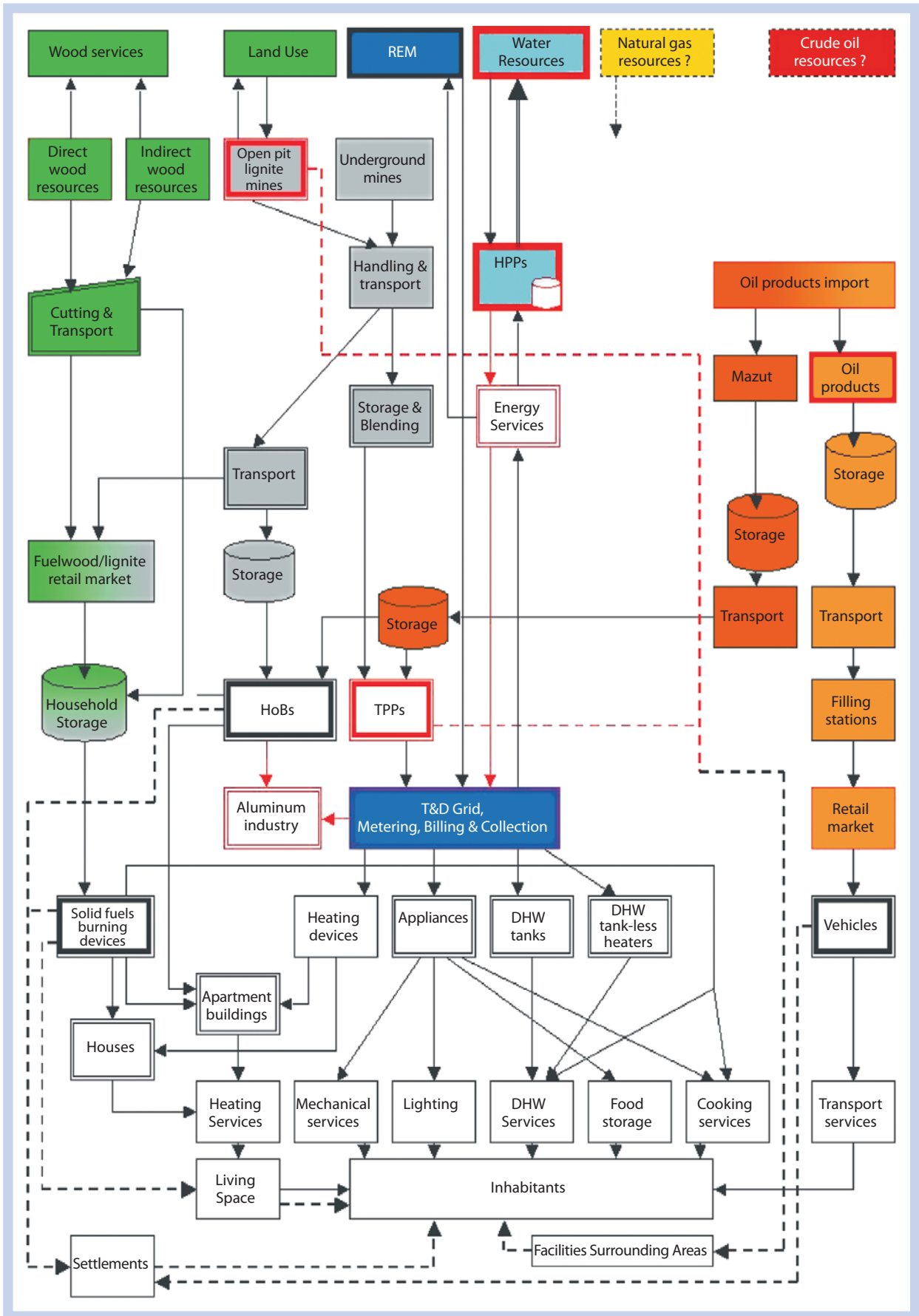
Features	Notes
Legal framework	Law on State Aid Control, secondary legislation
General prohibition of state aid	No
Identification of stranded costs	No
Institutions	Commission for the Control of State Support and Aid nominated by ministers, the Community of Municipalities and the Association of Employers, Department for the preparation of state aid within the Ministry of Finance
Independence of institutions	Yes
Transparency	Yes, in general
Public support measures	Subsidies to vulnerable electricity consumers, state guarantees for loans to public companies

Fossil fuel	Main subsidy issue
Lignite	Access to mineral resources priced very low in Montenegro. Little environmental protection is priced in. Environmental costs and the depletion of resources are the main sources of subsidy. Furthermore, the government supports overstaffing in lignite mines. Depletion of available resources is a critical issue in the former Yugoslav Republic of Macedonia.
Coal	NA
Crude oil	NA
Natural gas	NA
Oil products	Low-end price of oil products is supported by relatively efficient procurement from the Mediterranean market. Lack of independent quality control and tax evasion. Montenegro prices oil products below EU average.

⁶⁰ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Electricity	The Montenegrin incumbent electricity generator delivers electricity via two major bilateral contracts. Massive hydro power plant Piva is leased on a long-term contract to a Serbian electricity utility company in exchange for supplies of base-load electricity. This contract prices in opportunity costs of peaking hydro power as it is inherited from the former Yugoslavia's commercial electricity market. However, base-load electricity is delivered to a major base-load consumer, Aluminum Smelter, which consumes over 40% of the electricity in Montenegro. The long-term electricity price is fixed below market prices, which effectively offsets the commercial benefits from the contract with the Serbian electricity utility company. It is not known whether Montenegro power utility has a risk- and profit-sharing arrangement with Aluminum Smelter and to what extent eventual benefits from that contract are shared with the Serbian partner. In retail sales the tariff system contains a significant cross-subsidy between commercial consumers and household consumers. The very high price of electricity for commercial consumers is curbing employment and economic development.
District heating	NA

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	1/2/4	n.a.					n.a.
Environmental public goods	1/3/4/5/7	n.a.			6	1/3/4/5/7	n.a.
Access to land	1/2/3/4/	n.a.					n.a.
Rule of law	1/2/4/5/6/7	n.a.			4/6/	1/2/4/5/6/7/8	n.a.
Corporate structures		n.a.					n.a.
Direct assistance		n.a.					n.a.
Taxation	3	n.a.			2/3/4		n.a.
Prices and collection	2/6/7/	n.a.			5	1/8/7/6/4/3/2	n.a.
Competition and investments	1/9	n.a.			2/6	1/2/6/7/8/9	n.a.



Serbia

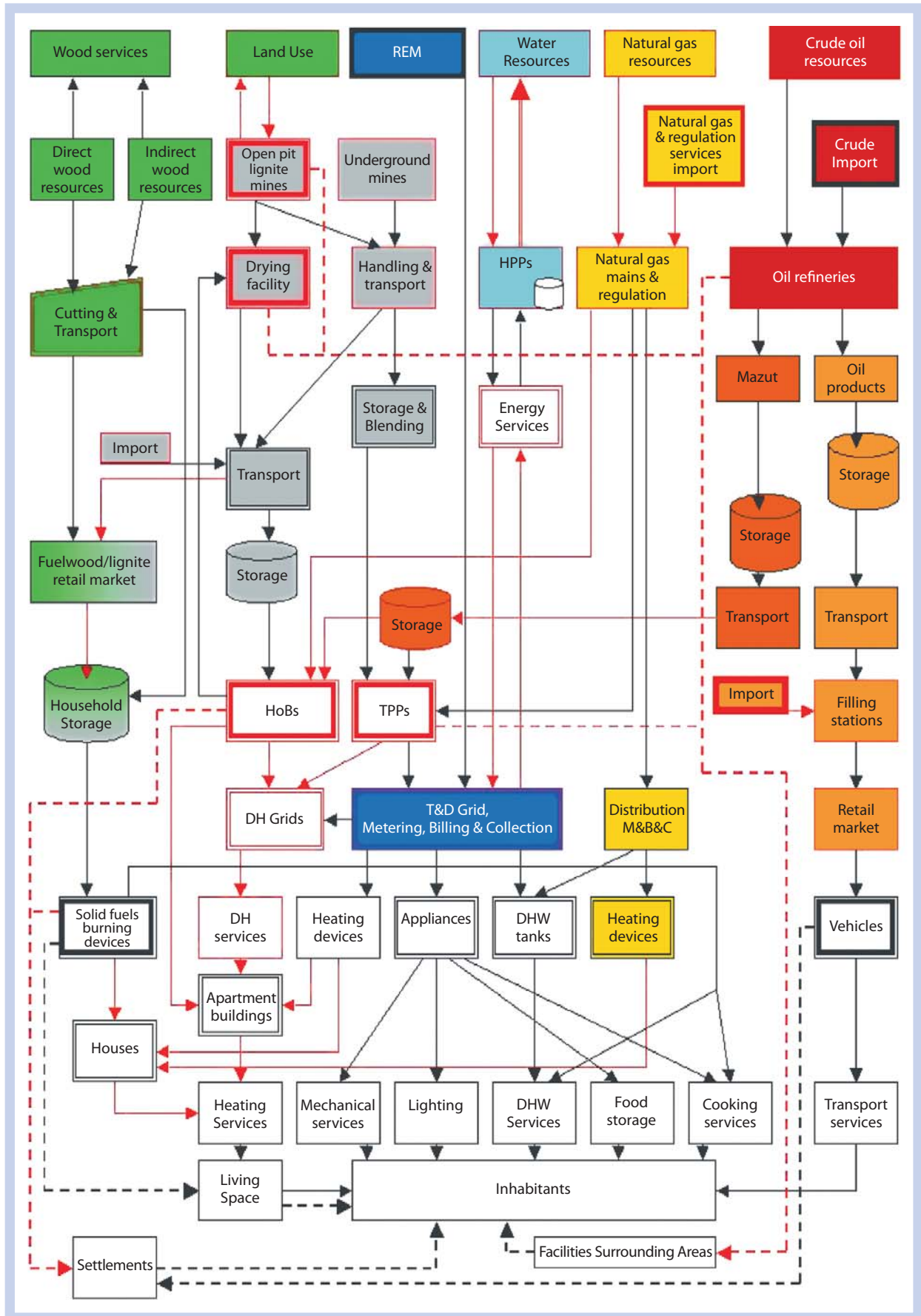
State aid regulations⁶¹

Features	Notes
Legal framework	Law on State Aid Control. Law does not apply to public companies – most energy companies are public companies
General prohibition of state aid	No
Identification of stranded costs	No
Institutions	Commission for State Aid Control was set up by the government on the basis of proposals from ministries, the Commission for the Protection of Competition, and the Division for the Control of State Aid within the Ministry of Finance
Independence of institutions	Government body
Transparency	Annual report on granted State Aid on the Ministry of Finance web site
Public support measures	Loans granted by the Environmental Protection Fund from the State Budget: <ul style="list-style-type: none"> – Loans to electricity companies; – Guarantees provided for loans to electricity companies; – Repayment of loans incurred by public companies in the electricity sector; – Subsidies to underground coal mines; – Grants to companies in the electricity sector; – Relief of debts incurred by electricity consumers during the privatization process; – Municipal budget assistance to district heating companies, according to the Law on Communal Services.

Fossil fuel	Main subsidy issue
Lignite	Access to mineral resources is priced very low in Serbia. Little environmental protection is priced in. Environmental costs and depletion of resources are the main sources of subsidy. Furthermore, governments support overstaffing in lignite mines. The Government of Serbia has provided massive direct assistance for expropriation as well as sovereign guarantees for loans to lignite mines. It has also channeled a considerable proportion of international aid to lignite mines.
Coal	The same subsidies as those applied to lignite are extended to coal resources in Serbia. The Government of Serbia provides direct regular subsidies to 8 underground coal mines still in operation. This is the only state aid officially declared in Serbia.

⁶¹ Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Crude oil	Low-cost access to mineral resources has been granted to an incumbent producer. Following privatization based on a government-to-government agreement, the incumbent producer has increased considerably the rate of depletion of domestic crude resources, increasing, therefore, the financial value of low-cost access to mineral resources.
Natural gas	Low-cost access to mineral resources has been granted to an incumbent producer. Serbia imports natural gas at a high costs – above Central Europe gas hub pricing. The share of domestic production is decreasing over time and now is below 10%. The high import price is offset by tolerated low collection rates.
Oil products	Serbia introduced an almost complete import ban for oil products from 2002 to 2011. It also tolerated certain forms of tax evasion. The high import cost of crude oil and low conversion efficiency of domestic refineries were offset, until the incumbent producer was privatized, by low-cost domestic production and oil product taxation below European standards. Furthermore, Serbia allows sale of substandard quality fuel. Following privatization of the incumbent producer, the prices of heavy residuals to district heating companies were increased beyond Mediterranean prices. The government was forced to assist district heating companies and other consumers with heavy fuel from emergency reserves. Payment guarantees were provided free of charge from municipal administrations and backed by the public budget. The outstanding debts of these customers to replenish public emergency stocks continue to accumulate. The environmental impacts of oil refineries are under priced. Through a privatization contract the government has provided further benefits to the incumbent producer.
Electricity	The average price of electricity is formed by a mix of lignite-fired generation (2/3) and hydro power generation (1/3). The environmental impact of lignite power plants are priced to a minimal extent. Opportunity prices for hydro power are not taken into consideration. However, despite this, the electricity price remains comparable to market levels. Collection rates are reported to be fairly high. However, there is confusion between revenue receiving accounts of the state-owned electrical utility and the treasury. A complex tariff system contains a cross-subsidy between household consumers with high consumption (in most cases poor and rural households) who pay a high end price due to high consumption and better-off households connect to the district heating system paying low-end prices. Large industrial consumers are provided with low price services.
District heating	High costs of district heating services (taking into account very low heat generation efficiency according to the second law of thermodynamics) and comparatively high fuel costs (oil residuals, natural gas) are offset by direct public subsidies and cross-subsidies of public and commercial consumers towards household consumers as well as delayed payment for fuels, public payment guarantees and direct subsidies. Commercial consumers with very low consumption efficiency and high weather sensitivity are subsidized through lack of capacity charge.



	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	1/2/3/4	1/2/3/4	1/2/3/4	1/2/3/4/	n.a.		
Environmental public goods	1/2/3/4/5/6/7/	1/2/3/4/5/6/7/	1/2/3/4/5/6/7	1/2/3/4/5/6/	1/2/3/4/5/6/7	1/2/3/4/5/6/7/	1/3/7
Access to land	1/2/3/4/	1/2/3/4/	1/2/3/	1/2/3/4/		1/2/	4
Rule of law	1/2/5/6/7/8	1/2/5/6/7/8	1/2/3/4/5/6/7/8/	1/2/3/4/5/6/7/8/	1/2/3/4/5/6/7/8/	1/2/4/5/6/7/8/	1/2/6/7/8
Corporate structures	1/2/3/4/5/6/7/	1/2/3/4/5/6/7/	1/2/4/5/	1/2/3/4/5/6/7/	1/2/5/	1/2/3/4/5/6/7/	1/2/3/5/6
Direct assistance	1/2/3/4/5/6/7	1/2/3/4/5/6/7		7/8/		1/2/3/4/5/6/7/8	1/2/3/4/5/6/7/8
Taxation	1/4/	1/4/	2/4		2/3/4/	1/2/3/4	1/
Prices and collection	1/2/	1/2/	5	2/4/7/6/	5/7/8	1/2/3/4/6/7/8	1/2/4/6/7/8
Competition and investments	1/2/9	1/2/9	1/3/6/8/9	1/2/3/4/5/6/9	1/3/8/9/	1/2/4/5/6/7/8/9	1/2/5/6/8/9

Kosovo

State aid regulations⁶²

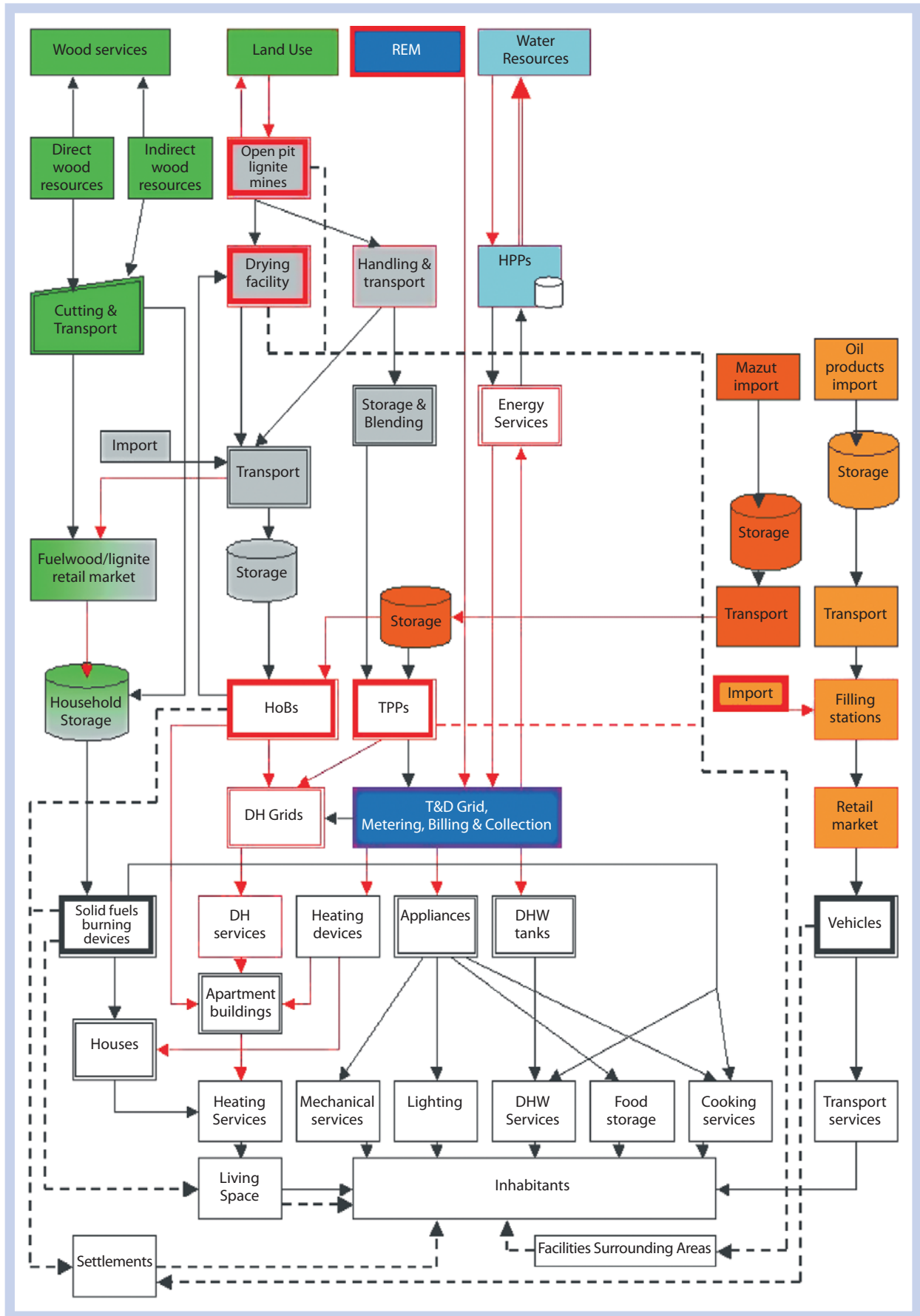
Features	Notes
Legal framework	Not yet Law on the Energy Regulator stipulates that cross-subsidies between consumers must be eliminated by 2014
General prohibition of state aid	No
Identification of stranded costs	No
Institutions	Not yet
Independence of institutions	Unknown
Transparency	Unknown
Public support measures	- Assistance to vulnerable energy consumers, subsidies to district heating companies; - Loans to power utility company; - Excises tax exemption for power utilities and district heating companies for heavy fuel oil procurement.

Fossil fuel	Main subsidy issue
Lignite	Access to mineral resources is priced very low in Kosovo. Little environmental protection is priced in. Environmental costs and depletion of resources are the main sources of subsidies. Furthermore, the government supports overstaffing in lignite mines.
Coal	NA
Crude oil	NA
Natural gas	NA
Oil products	Tolerated tax evasion.

⁶² Prepared in accordance with the 'State Aid Rules and Effectiveness of State Aid Control in the Electricity Sector under the Energy Community Treaty', study on behalf of the Energy Community Secretariat, final report, Hunton and Williams, Eisenberg and Herzog, Brussels and Vienna, April 2011, as well as a review of media reports, interviews, EU questionnaires and review of actual legislation.

Fossil fuel	Main subsidy issue
Electricity	Very high density of population near the major lignite-fired generators implies major environmental costs in electricity generation. These costs are not reflected in prevailing tariffs. The direct costs of lignite remain low as long as currently available deposits are depleting. Eventual opening of new lignite deposits is likely to include massive costs to procure land for open-cast mining. These massive costs are not included in long-term marginal costs and therefore lignite fuel for power generation remains under priced. It seems that the low collection rate is a major mechanism of further subsidies to end consumers. The capital stock in transmission and distribution of power is neglected and subject to continuous international assistance.
District heating	The low quality, high cost and poor collection rate of district heating services requires assistance from public funds to maintain a minimal operation level. However, the market share of district heating services remains limited.

	Lignite	Coal	Crude oil	Natural gas	Oil products	Electricity	District heating
Access to mineral resources	1, 2, 3, 4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Environmental public goods	1, 2, 3, 4, 5, 6, 7	n.a.	n.a.	n.a.	3/	1/2/3/5/6/7	2/7
Access to land	1, 2, 3, 4	n.a.	n.a.			n.a.	
Rule of law	2, 6, 7, 8	n.a.	n.a.		2		2
Corporate structures	1, 5, 6	n.a.	n.a.				
Direct assistance	1/2/3/4/5/7/8	n.a.	n.a.			1/3/4/5/8	1/3/4/5/8
Taxation	1/2/	n.a.	n.a.		2/4	4	
Prices and collection	2/	n.a.	n.a.		5	2/6/7/	2/4/6/
Competition and investments	1/2/	n.a.	n.a.			1/2/4/6/7/9	1/2/6/9/



11. Annex 3 :

Fossil fuel price-setting principles

Country		Electricity price setting	Natural gas price setting	District heating price setting	Principles of the electricity pricing
Albania, www.ere.gov.al		Regulator	-	n.a.	Cost+
BiH	1. Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina www.ferk.ba	Regulator	Ministry Local authorities for distribution	Municipal	Cost+
	2. Regulatory Commission for Energy of Republika Srpska www.reers.ba	Regulator	Regulator	Municipal	Cost+
Croatia, www.hera.hr		Government	Government	Municipality	Cost+
FYROM, www.erc.org.mk		Regulator	Regulator	Regulator	Cost+
Montenegro, www.regagen.		Regulator**	n.a.	n.a.	Cost+
Serbia, www.aers.org.rs		Government	Government	Municipality	Costs+
UNMIK, www.ero-ks.org		Regulator	n.a.	Regulator	Cost+

* Excise taxes are set variable against international oil product prices to compensate for price, both upward and downward, and price spikes. In most cases, adjustment mechanisms are sensitive to certain minimal changes in oil product prices at chosen international prices. As a consequence, the mechanism maintains nominal level of budgetary revenues within given margins.

** The regulator sets up the prices of lignite supplied to the only lignite-fired thermal power plant in Pljevlja from its only lignite mining company.

Country		Principles of the gas pricing	Principles of the district heating pricing	Oil product prices	Excise tax* and VAT for oil products	Coal, retail sales
Albania, www.ere.gov.al		-	n.a.	Liberal	Ministries	Liberal
BiH	1. Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina www.ferk.ba	Cost +	Cost +	Liberal, price cap, quality standards below EU standard	Ministries	Liberal
	2. Regulatory Commission for Energy of Republika Srpska www.reers.ba	Cost+	Cost +	Liberal, price cap, quality standards below EU standard	Ministries	Liberal
Croatia, www.hera.hr		Cost+	Cost+ ***	Liberal, price cap	Ministries	Liberal
FYROM, www.erc.org.mk		Cost+	Cost+	Liberal	Ministries	Liberal
Montenegro, www.regagen.		n.a.	n.a.	Liberal	Ministries	Liberal
Serbia, www.aers.org.rs		Costs+	Costs+ including municipal subsidy	Liberal, quality standards below EU standard	Ministries, different collection rules for domestic and imported	Liberal****
UNMIK, www.ero-ks.org		n.a.	Cost+	Liberal	Ministries	Liberal

*** Most of the district heating services provided from the national electricity utility are from DHPs. Consequently, district heating prices are related to electricity and natural gas prices.

**** The only domestic suppliers are 100% government-owned companies that supply to privileged customers on one hand and set of private retailers on the other.