CONNECTIVE CITIES

SUSTAINABLE URBAN ENERGY PLANNING IN SOUTHEAST EUROPE (SEE)

A Concept Paper for Connective Cities Regional Virtual Dialogue Event 17-21 May 2021

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THE CURRENT CONTEXT AND IMPORTANCE OF SUSTAINABLE ENERGY IN THE SEE

The energy sector influences the vibrancy and sustainability of the entire economy – from job creation to resource efficiency and the environment. Significant shifts in the sector can have a strong ripple effect throughout the economy. Making the energy supply more cost-effective, reliable, secure, and environmentally sustainable thus contributes to the long-term resilience of economic development[1].

Faced with the twin challenges of sluggish economic growth and the mounting imperative to decarbonize economies, SEE countries are looking for solutions to improve their economic performance while minimizing further greenhouse gas emissions. Given this context, renewable energy, energy efficiency, and energy financing is emerging as a solution to meet growing energy demand while sharply reducing carbon emissions and as a potential engine for local economic growth. This could also be developed as a business model for the Cities/Municipalities in SEE to generate revenue so that more actions could be taken towards local economic development.

Accelerating the deployment of renewable energy and energy-efficient technologies will fuel economic growth, create new employment opportunities, and contribute to a climate-safe future. For instance, solar PV creates at least twice the number of jobs per unit of electricity generated than coal or natural gas[2]. As a result, substituting fossil fuels for renewables could lead to higher job creation and retention.

Energy turnover has no alternative in Southeast Europe (SEE). As a coal-dependent net energy importers' region, SEE faces a challenging energy transition addressing three overarching objectives: a) energy security, b) environmental protection, and c) competitiveness. The region as a whole urgently needs to modernize its energy systems and infrastructure, which is degraded and sparse in places.[3] The situation is equally critical in Western Balkans (WB) and the EU's Eastern Partnership (EaP) countries. The high inefficiency is due to several reasons: poorly maintained infrastructure in need of revamping, severe energy losses in distribution and transmission, and inefficient end-use, especially in buildings. Pockets of energy poverty and vulnerable population groups lead to inefficient biomass use, particularly for space heating. Large urban areas perform better with more efficient district electricity and gas markets. Still, the entire SEE is marked by poor insulation and weak construction codes, with energy efficiency norms only recently emerging as a policy priority.[4]

It should be noted that all countries within SEE region are classified as economies in transition[5] , meaning that as these countries prosper in terms of economic development and economic growth, energy demand and consumption would also inevitably increase. Hence, to solve this perceived dichotomy of reducing the energy sector's carbon intensity on the one hand and sustained economic growth with risen energy demand on the other, increased energy efficiency and share of renewable energy sources becomes crucial for these countries and communities living in them.

The next decade could prove to be a pivotal one for the energy sector in SEE. The region possesses a considerable potential for developing renewable energy and improving energy efficiency. To harness this potential and fully achieve the energy transition, the region will need to:[6]

a) set new targets which are energy responsive
b) ensure a sustained investment in variable renewable energy and energy-efficient technologies
c) develop its modern biomass industry and introduce a holistic policy framework
d) address regulatory issues that impede investment

[1] IRENA (2016), Renewable Energy Benefits: Measuring The Economics. IRENA, Abu Dhabi.

[2] Ibid

[3] OECD, Competitiveness in South East Europe: A Policy Outlook, 2018.

[4] For more information, see Connective Cities report Stakeholder Mapping and Engagement Strategies for Connective Cities South East Europe, submitted on 08 April 2020.

[5] The World Economic Situation and Prospects, United Nations Publication, New York, 2020

[6] IRENA (2019), Renewable Energy Market Analysis: Southeast Europe. IRENA, Abu Dhabi

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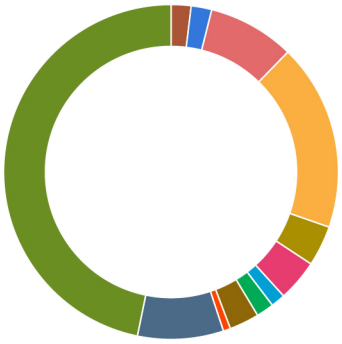
CURRENT TREND AND SCENARIO IN SEE

The following tables (Figures 1 and 2) provide some context regarding the energy consumption by countries and how some sectors leverage energy in the SEE region. From the table, it can be seen that Residential, Transport, and Industry are the biggest consumers of energy. The residential sector is the largest consumer in most countries, with an average of 32% share of TFEC, followed by Transport and Industry sectors, respectively with 29% and 20%.

The tables indicate that if proper strategies are in place to reduce energy consumption by finding alternative ways through renewable energy or process efficiency, such interventions will directly result in savings in energy expenditure. Such savings could be used to stimulate local economic development.

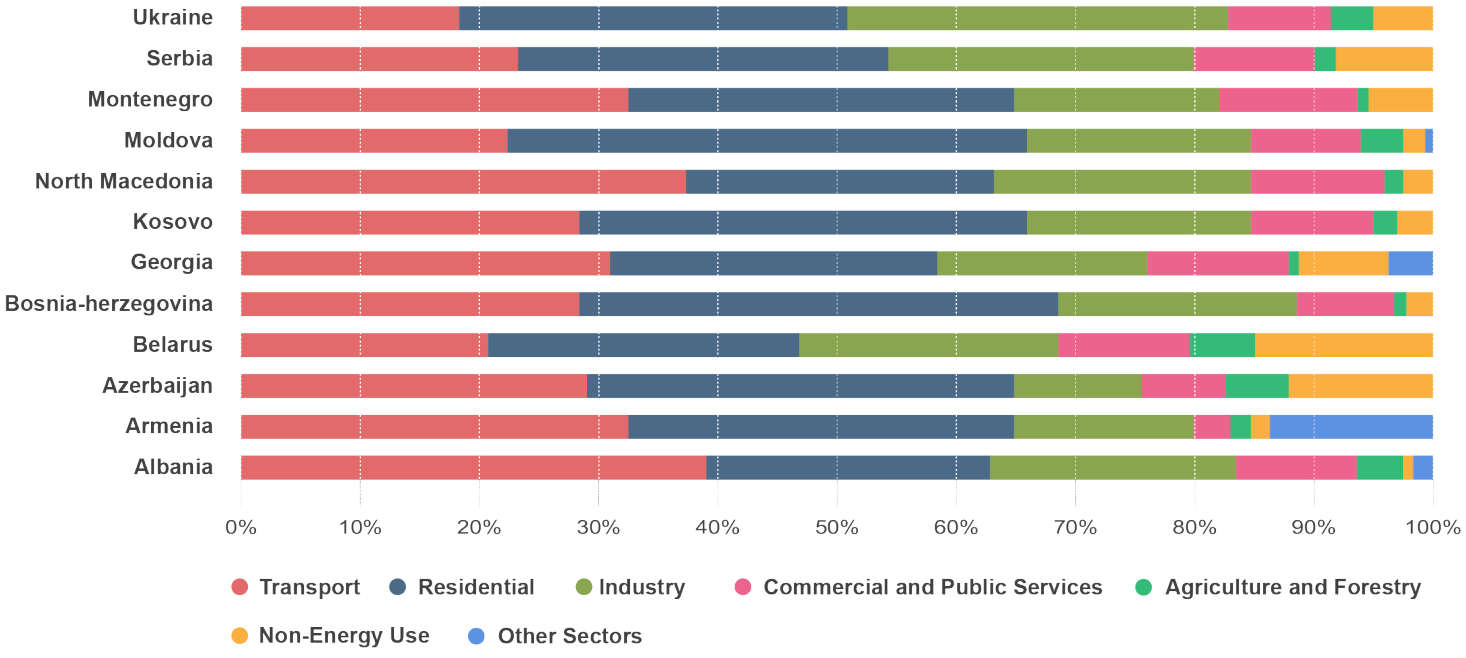
FIGURE 1: TOTAL FINAL ENERGY CONSUMPTION (TFEC) IN 2019



Albania	2 121,00
Armenia	2 189,00
Azerbaijan	9 213,00
Belarus	19 858,00
Bosnia-herzegovina	4 302,00
Georgia	4 419,00
Kosovo	1 520,00
North Macedonia	1 872,00
Moldova	3 171,00
Montenegro	770,00
Serbia	9 125,00
Ukraine	51 457,00

Source: IEA webpage

FIGURE 2: TOTAL ENERGY CONSUMPTION (TFEC) BY SECTORS 2018



Source: IEA webpage

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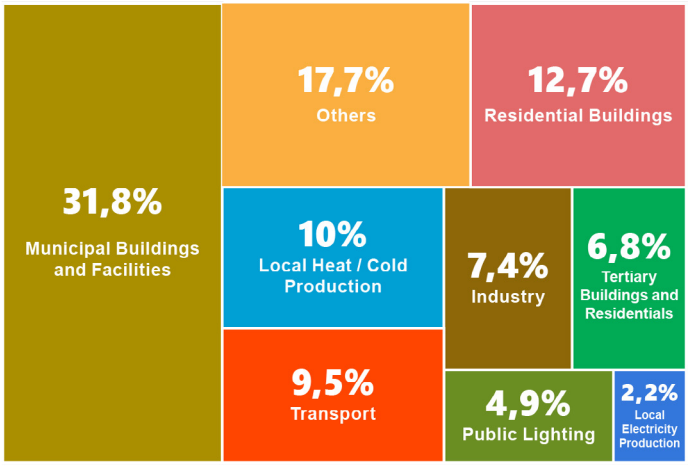
Efficiency can be improved through a wide variety of measures in all energy-consuming sectors. The industrial sector is especially well suited for rapid efficiency gains. Implementing energy-efficient technologies will require incentives to make changes, awareness of the opportunities, and capital investments. As outdated factories are replaced with modern ones, major improvements will be realized because energy efficiency can be integrated throughout the plants. In the residential sector, radiator valves can reduce space heating needs, improve lighting and appliances, conserve electricity, and enhance controls and insulation to reduce coal use at district heating plants. However, even well-retrofitted existing buildings are much less efficient than properly designed new buildings, and the construction of new buildings is likely to be slow. Transportation sector efficiency improvements will be even more dependent on replacing existing equipment and significant system upgrades, which may take many years. Thus, the SEE countries need to be very strategically focused and need to build a sound strategy to determine how to be energy responsive. Cities/Municipalities are the major institutional entities to engage with the industries and the sector players.

In 2008 EU launched its landmark local initiative - The Covenant of Mayors was established to gather local governments voluntarily committed to achieving and exceeding the EU climate and energy targets. Not only did the initiative introduce a first-of-its-kind bottom-up approach to energy and climate action, but its success quickly went beyond expectations and currently is the world's most significant movement for local climate and energy actions[7].

As of 2021, from the SEE region, 557 cities and municipalities have joined this initiative, with 39,458,531 inhabitants, representing 43%[8] of the total population of SEE region countries.[9]

Analysis of submitted Sustainable Energy Action Plans and priority measures identified in them shows that almost all critical sector mitigation actions are energy-consuming. This indicates a huge potential for cities and municipalities within the SEE region to transform their local economies and increase resilience and sustainability via increased energy efficiency and deploying renewable energy sources through innovative measures.

FIGURE 3: MITIGATION ACTIONS IN SECTORS BY SEE CITIES AND MUNICIPALITIES



Source: www.covenantofmayors.eu

SDG 7, 13 AND THE PARIS AGREEMENT, HOW IT AFFECTS THE ENERGY RESPONSE IN THE SEE

The adoption of the Sustainable Development Goals and the Paris Agreement sent a clear message that the transition to sustainable energy is central to meeting development and climate objectives. As policymakers consider options at their disposal, understanding the socio-economic benefits of this transition is of vital importance.

In an age of urgent climate and sustainability action, for the energy transition to succeed, policies must be based on an integrated assessment of the interactions among the evolving energy sector, the broader economy, and natural systems. To fully achieve the energy transition in the region, policies will have to go beyond mere direct support of renewable energy

[7] www.covenantofmayors.eu

[8] www.data.wordlbank.org

[9] www.covenantofmayors.eu

and should be rooted in recognition of the socio-economic impact of the energy sector as a whole[10].

The region is currently mulling its energy future, under immense pressure from local citizen groups, climate activists, and the sector's shifting economics. The process is deeply rooted in the universal 2030 Agenda (SDG 7 & SDG 13) and supported heavily by the EU anchored by its newly negotiated ambitious carbon-neutral commitment of the European Green Deal.[11] The climate law that the EU countries and the European Parliament have now agreed on leading the EU's total net emissions of greenhouse gases falling to zero by 2050. This will be done through reduced emissions, investments in environmentally friendly technology and nature conservation efforts. These developments are associated with funding mechanisms and regional multilateral initiatives. Energy Community attracts a particular interest as a sector-based international organization established between the EU and several third countries to expand the EU internal energy market and accelerate the energy transition in SEE. This Europe-wide process provides essential avenues for advancing the continent's new energy future. It can serve as a source of inspiration, learning, funding, and activation for municipalities in the SEE region.

International agreements such as the Energy Community Treaty and the Paris Agreement have provided the stimulus for changes that emphasize the decarbonization of the energy sector and the larger deployment of renewables and energy-efficient technologies.[12]

[10] IRENA (2019), Renewable Energy Market Analysis: Southeast Europe. IRENA, Abu Dhabi

[11] Communication from The Commission to the European Parliament, the European Council, The Council, the European Economic and Social Committee and The Committee of the Regions the European Green Deal COM/2019/640 final.

[12] IRENA (2019), Renewable Energy Market Analysis: Southeast Europe. IRENA, Abu Dhabi

CRITICAL CHALLENGES FOR SEE TO BE ENERGY RESPONSIVE:

All considered countries in SEE are developing energy policies and practices that have many features in common; simultaneously, each country pursues its specific path considering an overall local context. In reforming their energy sectors, the countries need to pay particular attention to implementing enabling regulatory and institutional frameworks, issuing laws and regulations supported with secondary legislation and norms-setting mechanisms; designating the state and public authorities in charge of planning, executing, and monitoring energy policies; developing strategic programs and documents; promoting appropriate fiscal policies conducive to attracting foreign and domestic investments and others. They also need to consider the SDGs' objectives when developing their national strategies and programs for economic development[13].

At present, a range of market, regulatory failures, and information barriers discourage SEE Countries from increasing their energy productivity, even with high energy prices. Capital constraints, particularly for low-income households, are a significant hurdle. Consumers also tend to lack the information they need to make the right choices. Insulated from the actual price of energy, many companies have relatively little incentive to identify and invest in the available fragmented energy savings opportunities. And today's tighter credit markets are squeezing the financing of all investments—even less risky ones, such as those in energy efficiency[14]. Investments in greater energy productivity would reduce the supply capacity that these countries would otherwise need to build to keep up with growing demand. Energy efficiency improvements require less capital than new power plants or other energy-supply investments, so improving energy productivity also cuts down on energy-related capital needs. Being energy efficient and improving energy productivity in products, homes, and commercial buildings can help to:

[13] Chachine Alexandre, Sustainable Energy for All in Eastern Europe, the Caucasus and Central Asia. Analysis of National Case Studies, Geneva 2019.

[14] Mckinsey Analysis on Energy Efficiency 2016

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- reduce consumer energy bills
- protect the environment
- enhance industry energy productivity
- contribute to a competitive energy market, and
- better manage energy demand.

Based on a desk review of already conducted country-specific analysis, some critical challenges and barriers common to all the countries can be identified. These are the financial and institutional challenges that cities and municipalities face in increasing energy efficiency and increasing renewable energy sources while attracting financing for those measures.

FIGURE 4: BARRIERS AND CHALLENGES AT THE LOCAL LEVEL[15]

DIMENSION	SPECIFIC ISSUES
LEGAL	o Time-consuming legal process for receiving grant financing by municipalities o Hurdles in the design and solution for energy efficiency and green procurements created by unclear state procurement procedures o Lack of legislative regulation for energy performance contracting, green financing and green procurement and for Public-Private Partnership o In some SEE countries absence of national norms and standards on energy efficiency o No clear supporting national policies and specific programs to support investments in municipal sustainable climate change and sustainable energy measures
ADMINISTRATIVE	o Local leaders not understanding the long-term vision of EE and RE and its' economic importance o appropriate local statistics and data on energy not sufficient to carry out further R&D o Lack of cooperation among authorities of different levels involved in climate and energy policy o Local authorities not able to attract and retain qualified personnel capable of formulating, raising funds, and ensuring the successful implementation of complex infrastructural projects in the realm of sustainable energy
INSTITUTIONAL	o Limited decision-making autonomy of local authorities regarding EE and RE o track record or creditworthiness of cities/municipalities not in place. o Local authorities not fully aware of EE opportunities and benefits, as well as and limited capacities to identify and develop bankable project proposals for sustainable energy investments o Limited capacities of smaller municipalities to design and engage in complex EE projects o Low "loan absorption capacity" of small communities o Focus on projects with short paybacks o Limited market readiness of EE service vendors o Lack of coordination mechanisms between national and local governments
FINANCIAL	o Limited local public finances and little involvement of private sector o Limited access to funding sources and commercial financing (limited creditworthiness and adequate collateral) o Lack of fiscal and tax incentives, as well as innovative financial instruments, other than grants o In some SEE countries, subsidies for energy prices for the population make EE project financially unattractive for investors o International financial institutions target more significant projects and localities

[15] Adopted from country specific reports on National Roadmap for Removing the Barriers and Fostering the Drivers of SEAP/SECAP Implementation

SOME KEY STEPS NEEDED FOR THE FUTURE IN THE SEE

While the respective countries need to address the barriers and address the challenges in their own governments/Cities/Municipalities, there is also an urgent need to work with each other by leveraging the knowledge and skill base in the region.

- Increase regional integration and collaboration, for example, sharing refinery capacity or producing electricity from renewables in one country for sale in another
- Launch joint investment projects,
- Optimize technology and invest in equipment to quell losses in production, transmission, and distribution of electricity
- Attract more private investment in renewable energy
- Align energy legislation to the directives of the EU Third Energy Package

ENERGY FINANCING – A KEY STRATEGY GOING FORWARD

As EE and RES gain importance, public and private players are soliciting funds to implement new and innovative programs. All over the world, governments usually struggle to find sufficient funding to cover the existing need, thus, donors and IFIs remain the largest source of public funding dedicated to energy efficiency and renewable energy projects[16]. Commercial Banks are also another source of funding. In Central and Eastern Europe, as in the rest of Europe, banks have not yet fully embraced energy efficiency projects as they are not yet conversant in analyzing the risks associated with such projects. The banks need a different methodology for valuation and risk assessment than traditional investments[17]. Banks tend to finance products which are financially viable and ensure return on investment.

Besides financing, conducive policy interventions that can attract investment in energy are also needed to overcome a variety of economic barriers (e.g., access to finance for the procurement of modern appliances) and noneconomic barriers (e.g., low consumer confidence). Last but not least, energy efficiency projects can be developed in close partnerships between clients, either public or private, and energy services providers, through Energy Performance Contracting and ESCOs. [18]

Investment needs, just for the EE and RES measures, are huge compared with municipal annual budgets. As depicted in the following Table, tens of millions of EUR in investments are needed, even for small cities. Municipal budgets are not enough to finance this level of infrastructure investments even using loans, because the loan repayment capacity is limited to the typical annual capital expenditures that are small comparing to investment needs. Municipalities also have investment obligations in other sectors as well (like roads, water and wastewater infrastructure and others).[19]

FIGURE 5: HYPOTHETICAL EXAMPLE OF A CITY OF 150,000 – TOTAL AND PER CAPITA INVESTMENT NEEDS[20]

COUNTRY	EUR Million	EUR Per Capita
EE in Buildings	46	303
District Heating - Heat Power	77,4	509
District Heating - Distribution Network	26,625	175
District Heating - IHS	3	20
Sollar Collectors	3	20
Urban Public Transport	21,38	141
Street Lighting	4	26
PV	22,5	148
Total	203,905	1,341

[16] Adopted from Incentives for Energy Efficiency, CEE/SEE Region by TPA Group

[17] Adopted from Incentives for Energy Efficiency, CEE/SEE Region by TPA Group

[18] IRENA (2019), Renewable Energy Market Analysis: Southeast Europe. IRENA, Abu Dhabi

[19] Municipal Finance Study on Energy, Climate and Environment Sectors in Eastern Partnership Countries, Final Report, June 2020.

[20] Ibid

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- To ensure improvements in EE, SEE countries need to ensure stable sources of financing for the required EE investments by making changes in national legislations to liberalize fiscal structures for attracting such investments. Tax incentives, on-bill financing/re-payment, credit lines, energy service agreements or ESCOs, green bonds, vendor credit and/or leasing as well as risk guarantees comprise the financing mechanisms in the residential and industrial sectors, as well as in commercial services need to be introduced to ensure the EE investments[21].

- In the case of RE, there is a need to focus on offering investment incentives for RE technologies such as investment subsidies, credit grants, lower interest rates, tax credits or exemptions. The other intervention is to raise the sales price of renewable electricity above market prices to help RE compete with conventional energy sources. They can be price-based, quantity-based and hybrid promotion schemes. For example, auctions can be considered as hybrid schemes, since they include elements of both price-based and quantity-based promotion schemes[22].

- Coming from the above, upcoming virtual event aims to bring together the representatives of cities from the SEE region and donor organizations as well as IFIs actively engaged with and interested in EE and RES within the region to discuss the: a) challenges cities and municipalities face in attracting external financing for local EE and RES projects b) challenges donor organizations and IFIs face in identifying sound and well conceptualized project ides for EE and RES c) financing opportunities beyond conventional financing instruments currently deployed in SEE region and d) ways connective cities could support the matching of municipalities' needs and donors/IFIs' interest for good projects for financing.

[21] Khamrakulova Nadejda, Financing Energy Efficiency and Renewable Energy Investments for Climate Change Mitigation, Final Report, July 2018.

[22] ibid

AGENDA FOR ACTION: SUSTAINABLE URBAN ENERGY PLANNING IN SOUTHEAST EUROPE (SEE)

As the world moves into the second year of the pandemic, still trying to find ways to contain it more effectively and promote economic recovery; the readiness of cities and other urban settlements is critical to ensure effective national, regional, and global responses by identifying specific actions that could be implemented to recover faster and regain some "degree of normality". In this context, the proposed Dialogue Event aims to promote an exchange of relevant municipal expertise in energy efficiency and renewable energy through a facilitated peer-to-peer consultation among urban practitioners from SEE and Germany. Through its virtual format, the Event expects sharing of a wide variety of information through interaction, knowledge, and experience sharing between the participants and provide the latest development and research in the field that impacts the region, while addressing the issues raised above.

The Event focuses on leveraging expertise, and experience in dealing with the situations described above under a three-broad area of intervention:

1. **Boosting energy efficiency in municipalities** - The Working Group will be looking into the options of energy efficiency in cities and compare some innovative solutions at the municipal level to determine short-term and medium-term action plans.

2. **Fostering municipal energy production and supply through Renewable Energy Sources (RES)** - This Working Group will look into the replacement of carbon-based energy generation with fewer environment contaminating options and the challenges related to the municipal planning of renewable energy sources.

3. **Promoting innovative municipal financing in sustainable energy projects** - The third Working Group will focus on the financing aspects of municipal sustainable energy projects.