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POTENCIJALI I IZAZOVI ZELENE TRANZICIJE U ZEMLJAMA ZAPADNOG BALKANA

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Rezime: Zelena tranzicija je dugoročan proces koji zahteva transformaciju zastarelog ekonomskog modela zasnovanog na fosilnim gorivima u model cirkularne ekonomije. Rad analizira spremnost zemalja Zapadnog Balkana za sprovođenje zelene tranzicije, u kontekstu obaveza iz Evropskog zelenog plana i Zelene agende. Cilj je utvrditi kapacitete i izazove u oblasti regulatornog okvira, institucionalne infrastrukture, energetskog miksa i dostupnosti održivih finansijskih instrumenata. Primijenjena je komparativna analiza sekundarnih podataka, a rezultati ukazuju na visoku zavisnost od uglja (preko 70% u Srbiji), ograničenu primjenu obnovljivih izvora (manje od 5% u većini zemalja), te nedovoljnu iskorišćenost finansijskih mehanizama EU. Institucionalni kapaciteti su neujednačeni, a ESG standardi tek u početnoj fazi primene. Zaključuje se da zelena tranzicija predstavlja strateški izazov, ali i priliku za modernizaciju ekonomija regiona, uz potrebu za jačanjem regulatornog okvira, transparentnijim upravljanjem i boljim korišćenjem dostupnih investicionih fondova.

Ključne reči: zelena tranzicija, zelene obveznice, Zelena agenda za Zapadni Balkan, ugljenični otisak

JEL klasifikacija: G1, Z0, Q0, Q5

Uvod

Zemlje Zapadnog Balkana kandidati su za pristupanje Evropskoj uniji (sa izuzetkom Kosova*, koje ima status potencijalnog kandidata) i suočene su sa zadatkom usklađivanja svojih pravnih okvira, ekonomskih strategija i političkih inicijativa sa standardima Evropske unije (u daljem tekstu: EU). U tom kontekstu, sprovođenje održive finansijske politike ima poseban značaj, jer je ključno za pokretanje tranzicije ka održivim ekonomijama. EU se suočava sa ozbiljnim izazovima u oblastima zaštite životne sredine, klimatskih promena, geopolitičke nestabilnosti i široko rasprostranjenih društveno-ekonomskih nejednakosti. Vitošević i saradnici (2020) ističu da su klimatske promene i pitanja zaštite životne sredine postavila nove izazove pred ekonomski razvoj, pri čemu se energetske sektor, kao najveći emiter ugljen-dioksida, nalazi pod najvećim pritiskom da sprovede reforme.

Usvajanje evropskog Zelenog plana postavilo je temelje za integraciju održivih finansija u zemljama članicama EU. U cilju uključivanja susednih regiona u ostvarivanje ciljeva ovog plana, usvojena je Zelena agenda za Zapadni Balkan, koju su analizirali Filipović i Ignjatović (2022). Ova agenda uvodi novi razvojni koncept koji podržava ključne inicijative, poput prelaska na cirkularnu ekonomiju. Jedan od najvažnijih instrumenata koji podržavaju ovaj proces tranzicije jesu zelene obveznice i drugi održivi finansijski instrumenti, koji su stekli značajnu popularnost kao sredstva za finansiranje projekata usmerenih na smanjenje emisije ugljen-dioksida i jačanje ekološke održivosti u regionu. Zelene obveznice predstavljaju najčešće korišćen oblik ulaganja i najrazvijeniji instrument među GSSS obveznicama (zelenim, socijalnim, održivim i obveznicama povezanim s održivošću). Njihova primena sve je rasprostranjenija u finansiranju projekata smanjenja emisija, održivog razvoja i investicija u čistiju proizvodnju, čime se doprinosi postizanju cilja od 2°C definisanog Pariškim sporazumom (Olgić Draženović, 2025). Pored finansijskih instrumenata, značajnu ulogu u tranziciji ka održivosti imaju i ESG standardi, koji predstavljaju ključni stub poslovne otpornosti u kontekstu zelene tranzicije (Suljić Nikolaj i saradnici, 2024). Prema Petrović Tomić (2023), ESG kriterijumi (ekološki, socijalni i upravljački) više nisu samo pitanje etičke posvećenosti, već strateška potreba za dugoročnu konkurentnost i efikasno upravljanje rizicima. S obzirom na to da sve zemlje Zapadnog Balkana teže članstvu u EU, Zeleni plan predviđa mere koje bi trebalo integrisati u pregovaračka poglavlja u procesu pristupanja, kao i u programe ekonomske saradnje koji se oslanjaju na postojeće sporazume o stabilizaciji i pridruživanju (Vasilkov i saradnici, 2021). Stoga je od izuzetne važnosti istražiti dinamiku zelene tranzicije u zemljama Zapadnog Balkana, posmatranu kroz prizmu njihovih institucionalnih, regulatornih i ekonomskih kapaciteta, kao i spremnosti da sprovedu zahteve postavljene Zelenim planom EU i Zelenom agendom za region. Rad se fokusira na analizu ključnih izazova u procesu prelaska sa konvencionalnog modela razvoja zasnovanog na fosilnim gorivima ka održivim, dekarbonizovanim i cirkularnim ekonomskim modelima.

Cilj rada je višestruk: (1) analizirati regulatorni i institucionalni okvir zelene tranzicije u zemljama Zapadnog Balkana, (2) identifikovati izazove i potencijale implementacije Zelene agende u svetlu ciljeva Evropskog zelenog plana, (3) izvršiti uporednu analizu energetske politike i dostupnosti finansijskih instrumenata za održivi razvoj, te (4) proceniti nivo spremnosti pojedinačnih zemalja za sprovođenje zelene tranzicije.

Prvi deo rada analizira ključne pravne akte EU relevantne za zelenu tranziciju na Zapadnom Balkanu, uključujući Zeleni plan i Zelenu agendu za Zapadni Balkan. U drugom delu teorijski se razmatra koncept zelene tranzicije, s posebnim fokusom na Zapadni Balkan. Treći deo rada daje pregled energetske tranzicije u regionu, dok četvrti, najopsežniji deo rada, detaljno analizira energetske sektor svake zemlje Zapadnog Balkana. Peti deo rada sadrži zaključak.

* Sve reference vezane uz Kosovo, bilo da se radi o teritoriji, institucijama ili stanovništvu, u tekstu će biti shvaćene u potpunom skladu sa Rezolucijom 1244 Saveta bezbednosti Ujedinjenih nacija i bez prejudiciranja statusa Kosova.

Metodologija

Ovaj rad se zasniva na kvalitativno-deskriptivnom i komparativnom istraživačkom pristupu, koji omogućava procenu spremnosti zemalja Zapadnog Balkana za sprovođenje zelene tranzicije. Korišćeni su sekundarni podaci iz relevantne naučne i stručne literature, zvaničnih dokumenata zemalja, institucija EU, kao i izveštaja međunarodnih finansijskih organizacija kao što su Organizacija za ekonomsku saradnju i razvoj (engl. Organisation for Economic Co-operation and Development – OECD), Evropska agencija za životnu sredinu (engl. European Environmental Agency – EEA), Evropska banka za obnovu i razvoj (European Bank for Reconstruction and Development – EBRD), Svetska banka (engl. World Bank, WB), kao i nacionalni strateški dokumenti zemalja regiona: Nacionalni energetske i klimatski plan (engl. National Energy and Climate Plan – NECP, Nacionalni akcioni plan za energetske efikasnost (engl. National Energy Efficiency Action Plan – NEEAP), strategije energetskog razvoja i izvori energetskih kompanija). Takođe su korišćeni statistički podaci iz baza kao što su Eurostat i Evropska fondacija za obuku (engl. European Training Foundation – ETF).

U svrhu analize spremnosti zemalja Zapadnog Balkana za sprovođenje zelene tranzicije, korišćena je komparativna metoda i deskriptivno-analitički pristup, kojom su upoređeni ključni indikatori i politike po zemljama. Na osnovu prikupljenih podataka, izvršena je interpretacija postojećih pravnih i institucionalnih okvira, energetskog miksa i nivoa razvoja održivih finansijskih instrumenata. Analiza se odnosi na period od 2019. do 2024. godine, kako bi se obuhvatili ključni procesi sprovođenja Evropskog zelenog plana i Zelene agende za Zapadni Balkan, koji su inicirani krajem 2019. i tokom 2020. godine. Ovakav metodološki okvir omogućava sagledavanje trenutnog stanja i identifikaciju ključnih faktora koji utiču na efikasnost sprovođenja politike zelene tranzicije u zemljama regiona.

Strukturiranje nalaza obuhvata četiri osnovne dimenzije: (1) regulatorni okvir, (2) institucionalni kapacitet, (3) energetske miks i (4) dostupnost i primenljivost finansijskih instrumenata za zelenu tranziciju. Ovaj model omogućava holistički pregled faktora koji determinišu mogućnosti za uspešno sprovođenje Zelene agende za Zapadni Balkan.

Evropski zeleni plan i Zelena agenda za Zapadni Balkan

EU je 2019. godine usvojila Evropski zeleni plan, koji Evropska komisija (European Commission, 2019b) definiše kao novu strategiju rasta usmerenu ka transformaciji Evrope u pravedno i prosperitetno društvo, sa modernom, ekonomičnom i konkurentnom ekonomijom, u kojoj do 2050. godine neće biti neto emisija gasova sa efektom staklene bašte i u kojoj ekonomski rast nije uslovljen povećanom potrošnjom prirodnih resursa. Sprovođenje Evropskog zelenog plana zahteva brojne reforme i unapređenje zakonodavstva u cilju obezbeđivanja čiste energije u svim sektorima; od ekonomije i industrije, preko proizvodnje i potrošnje, infrastrukture, transporta, prehrambenog sektora i poljoprivrede, do građevinarstva, sistema oporezivanja i socijalnih usluga. Ovim pristupom EU nastoji da iskoristi svoj kolektivni kapacitet za transformaciju društva i ekonomije, čineći ih postepeno održivijima, kao i da zaštititi, osigura i unapredi prirodni kapital, zdravlje i dobrobit građana od ekoloških rizika. Istovremeno, cilj je da se obezbedi pravedna društvena tranzicija, u kojoj nijedan pojedinac niti region neće biti zapostavljeni. Inicijative Evropskog zelenog plana obuhvataju (Jadreškić, 2024):

- Strategiju EU o prilagođavanju klimatskim promenama, kao dugoročnu viziju klimatski otpornog društva do 2050. godine;
- Strategiju biološke raznovrsnosti EU do 2030. godine, sa ciljem doprinosa oporavku biološke raznovrsnosti u Evropi;

- **Strategiju „od njive do stola“**, usmerenu na postizanje klimatske neutralnosti kroz održivu proizvodnju hrane;
- Evropsku industrijsku strategiju koja je podrška industriji kao pokretaču promena, inovacija i rasta;
- Akcioni plan za cirkularnu ekonomiju, kao okvir za prelazak na održive modele proizvodnje i potrošnje u postpandemijskom oporavku;
- Regulativu o baterijama i otpadu, sa ciljem uspostavljanja cirkularne ekonomije tokom celog životnog ciklusa baterija, od dizajna do reciklaže;
- Pravednu tranziciju, koja obezbeđuje finansijsku i tehničku podršku regionima pogođenim prelaskom na niskougljeničnu ekonomiju;
- Čistu, pristupačnu i sigurnu energiju, usmerenu na dekarbonizaciju energetskeg sektora;
- Strategiju održivosti hemikalija EU, sa ciljem zaštite zdravlja, jačanja konkurentnosti i podsticanja netoksičnog okruženja;
- Strategiju o šumama i krčenju šuma, kojom se uspostavlja ravnoteža između ekoloških, društvenih i ekonomskih aspekata održivog upravljanja.

Evropska komisija (European Commission, 2019a) ističe da Evropski zeleni plan ima ključnu ulogu u sprovođenju Agende UN 2030 i ciljeva održivog razvoja. Kako bi zelena tranzicija bila uspešna, važno je da i zemlje u okruženju EU preduzmu konkretne mere, što je doprinelo usvajanju Zelene agende za Zapadni Balkan. Prema Evropskoj komisiji (2020), ova agenda je razvojna strategija usmerena na klimatske izazove i usklađivanje propisa Zapadnog Balkana sa standardima EU. Usvojena je na samitu u Sofiji 2020. godine, uz učešće svih šest zemalja regiona.

Zelena agenda se temelji na Evropskom zelenom planu i njegovom investicionom okviru, a finansira se iz IPA fondova. Predviđen je paket od 9 milijardi evra za podršku ekološkim prioritetima u okviru ekonomskog oporavka do 2027. godine (Vasilkov i saradnici, 2021). Zemlje regiona, prema istim autorima, treba da razviju saradnju na svim nivoima, u skladu sa zakonodavstvom EU i ciljevima Zelenog plana. OECD (2022) navodi da je karbonski intenzitet u Srbiji, Bosni i Hercegovini i na Kosovu* dva do tri puta veći od proseka OECD-a. Visoko zagađenje i niska energetska efikasnost rezultat su zavisnosti od uglja i zastarele energetske infrastrukture.

Stubovi Zelene agende za Zapadni Balkan (European Commission, 2020):

1. Dekarbonizacija (klimatske akcije, čista energija i održivi transport)
2. Cirkularna ekonomija
3. Borba protiv zagađenja vode, vazduha i zemljišta
4. Održiva proizvodnja hrane
5. Biološka raznovrsnost (zaštita i obnova prirode i ekosistema).

Ovi stubovi će biti detaljno objašnjeni u nastavku, ali će se analiza potencijala zelene tranzicije u daljem radu fokusirati na stubove 1 i 3.

Zapadni Balkan se suočava s izraženim posledicama klimatskih promena, što čini dekarbonizaciju ključnim prioritetom za region. Smanjenje emisija gasova sa efektom staklene bašte i prelazak na obnovljive izvore energije neophodni su, posebno imajući u vidu zavisnost od uglja i zastarelu energetsku infrastrukturu. U tom kontekstu, podrška EU dolazi kroz karbonske kvote i mehanizme određivanja cene ugljenika, u skladu s njenim klimatskim zakonodavstvom. Uloga cirkularne ekonomije dodatno dobija na značaju, jer doprinosi smanjenju otpada, efikasnijem korišćenju resursa i razvoju održivih sistema proizvodnje i potrošnje. Planirani su i regionalni sporazumi usmereni na smanjenje plastičnog zagađenja, posebno u zaštiti morskih ekosistema (UNEP, 2021). Pitanje zagađenja vazduha takođe zahteva hitnu pažnju, jer su nivoi zagađenja u regionu među najvišima u Evropi (UNEP, 2021). Usklađivanje sa EU standardima u oblasti kvaliteta vazduha, voda i otpadnih voda, kao i modernizacija sistema praćenja i upravljanja, predstavljaju osnovu za poboljšanje javnog zdravlja. S obzirom na to da poljoprivreda u zemljama regiona čini oko 10% BDP-a, važno je podstaći održivi ruralni razvoj koji će unaprediti kvalitet i bezbednost hrane, smanjiti otpad i podstaći organsku proizvodnju (Županić i saradnici, 2021; Smart Kolektiv, 2021). Ovi naponi doprinose i postepenom usklađivanju sa evropskim standardima o bezbednosti hrane i dobrobiti životinja. Zaštita biodiverziteta predstavlja još jedan strateški cilj, posebno zbog bogatih prirodnih resursa regiona. U tom pravcu razvijaju se planovi za očuvanje staništa i obnovu šumskih područja (Smart Kolektiv, 2021). Kako navode Filipović i Ignjatović (2022), uspešna realizacija Zelene agende za Zapadni Balkan zahteva izradu nacionalnih akcionih planova koji obuhvataju koordinisane projekte u okviru svih ključnih oblasti, s ciljem postizanja održive ekonomije, boljeg životnog okruženja i otvaranja novih radnih mesta.

Zelena tranzicija u Evropskoj uniji i na Zapadnom Balkanu

Zelena tranzicija razvijena je kao odgovor na klimatske promene i degradaciju životne sredine, s ciljem podsticanja rasta kroz zelene tehnologije, održivu industriju i smanjenje zagađenja (European Commission, 2019). Težeći pravednosti i inkluzivnosti, ona klimatske izazove pretvara u razvojne prilike. U tom kontekstu, ESG principi postaju sve važniji deo korporativnih strategija. Prema Petrović Tomić (2023), njihova primena doprinosi održivosti i konkurentnosti. Iako zemlje Zapadnog Balkana još ne sprovode nefinansijsko izveštavanje, njihova povezanost sa EU tržištem čini usklađivanje sa ESG standardima sve značajnijim. Kompanije u regionu moraju se proaktivno prilagođavati kako bi očuvale konkurentnost. Istovremeno, održivo finansiranje se prepoznaje kao ključ za ekonomsku otpornost, pri čemu finansijske institucije igraju sve aktivniju ulogu (European Environmental Agency, 2023). Bankarski sektor, kako ističu Sredojević i Sredojević (2021), prelazi iz reaktivnog ka proaktivnom pristupu, prateći evropske regulatorne trendove.

Zelena tranzicija će imati snažan ekonomski i društveni uticaj – otvaraće se nova radna mesta, dok će neka nestajati, a obrazovni i zdravstveni sistemi moraće da se prilagode. Prema Rodrigues-Pose i Bartalucci (2024), troškovi tranzicije nisu ravnomerno raspoređeni i često pogađaju već ranjive regione, dok su rasprave o nejednakostima uglavnom usmerene na posledice nečinjenja u borbi protiv klimatskih promena. Ipak, tranzicija donosi i značajne mogućnosti za razvoj i širenje zelenih tehnologija (European Commission, 2019). OECD više od dve decenije sprovodi politike podrške zelenoj tranziciji na Zapadnom Balkanu, procenjujući konkurentnost malih i srednjih preduzeća i podržavajući javni, privatni i civilni sektor u prelasku na održive modele, sa fokusom na klimatsku otpornost, čistu energiju, efikasno korišćenje resursa i zaštitu ekosistema (OECD, n.d.).

Sprovođenje Zelene agende za Zapadni Balkan koordinira Savet za regionalnu saradnju, kao krovna institucija Procesa saradnje u jugoistočnoj Evropi (SEEC). Prema Akcionom planu za sprovođenje Sofijske deklaracije (2021–2030), Savet ima zadatak da poveže relevantne institucije, omogući razmenu iskustava i identi-

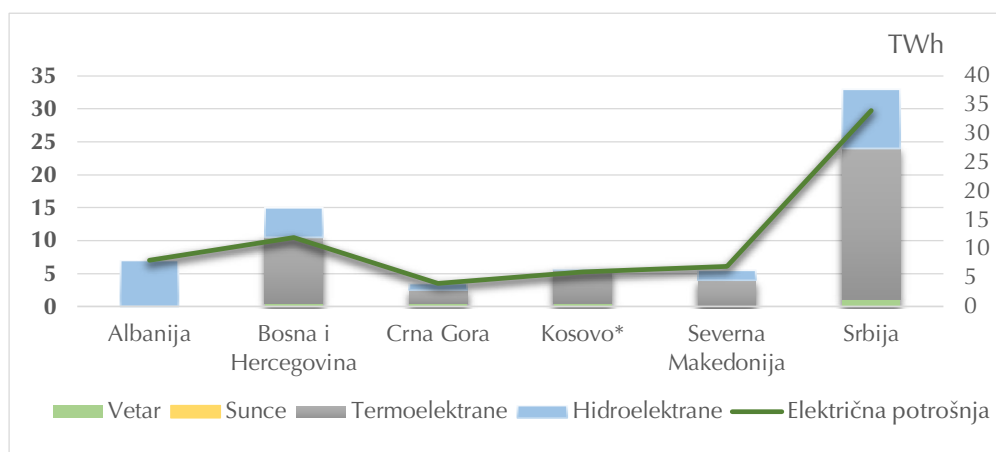
fikuje mogućnosti za širenje uspešnih inicijativa u regionu, uključujući i razvoj okvira za održivo finansiranje (Regional Cooperation Council, n.d.). U tom kontekstu, zelene obveznice postaju sve značajniji instrument finansiranja zelene tranzicije. Iako njihovo izdavanje podrazumeva dodatne troškove, poput pripreme dokumentacije i ocene od strane rejting agencija, one donose brojne koristi – od ekoloških efekata do veće transparentnosti i boljeg upravljanja rizicima. Srbija je prva u regionu plasirala zeleni evroobveznički zajam, a prikupljena sredstva usmerena su ka projektima održivog razvoja, energetske efikasnosti, obnovljivih izvora energije i smanjenja zagađenja (Olgić Draženović, 2025).

Energetski sektor na Zapadnom Balkanu

Energetski sektor ima značajan ekonomski, društveni i politički uticaj na Zapadnom Balkanu. Državne energetske kompanije, kao glavni proizvođači i snabdevači, među najvećim su privrednim subjektima, zapošljavaju veliki broj radnika i imaju snažnu ulogu u javnim finansijama i lancima snabdevanja (Kušljugić i saradnici, 2023). Energetsku politiku u velikoj meri oblikuju političke partije, pri čemu vlade, preko svojih predstavnika, kontrolišu sektor s ciljem očuvanja energetske suverenosti, socijalnog mira i zaposlenosti, često nauštrb efikasnosti i dugoročne održivosti. Takav pristup dovodi do lošeg upravljanja i neisplativih investicija (Kušljugić i saradnici, 2023).

Politički akteri na Zapadnom Balkanu još uvek ne raspolažu dovoljnim znanjem o važnosti dekarbonizacije energetskog sektora. Gašenje rudnika uglja bi imalo snažne ekonomske i društvene posledice, uključujući gubitak velikog broja radnih mesta i pad prihoda u lokalnim zajednicama. Skoro 70% električne energije u regionu i dalje se proizvodi iz uglja, izuzev Albanije, gde više od 99% dolazi iz hidroelektrana (Balkan Green Energy News, 2023). Prema Kušljugiću i saradnicima (2023), u 2022. godini na Zapadnom Balkanu proizvedeno je 69,5 TWh električne energije, od čega 63% iz termoelektrana na ugalj (Grafikon 1). Najveći udeo uglja u energetskom miksu imaju Kosovo* (92%), Severna Makedonija (72%) i Srbija (70%). U regionu je tada bilo aktivno 36 termoelektrana sa ukupnim kapacitetom od 8.255 MW, koje su zajedno sa rudnicima zapošljavale oko 46.000 direktno i do 100.000 radnika indirektno. Udeo hidroelektrana u proizvodnji iznosio je 34%, dok su varijabilni obnovljivi izvori (solarne i vetroelektrane) činili tek 3,5% ukupne proizvodnje. Iako je kapacitet solarnih elektrana porastao, njihov udeo je u 2022. godini iznosio svega 0,44%, dok je udeo vetroelektrana bio 3%. Instalirani kapaciteti obnovljivih izvora energije (OIE) po stanovniku iznose samo 0,0645 kW, što je 15,5 puta manje nego u EU, gde je proseka 1 kW po glavi stanovnika.

Grafikon 1 - Proizvodnja i potrošnja električne energije na Zapadnom Balkanu u 2022. godini



Izvor: obrada autora prema Kušljugić i saradnici (2023)

Potpisivanjem Ugovora o Energetskoj zajednici 2005. godine, zemlje Zapadnog Balkana započele su proces usklađivanja sa evropskim energetskim standardima, stvarajući zajedničko tržište električne energije i gasa sa EU. Usledilo je sprovođenje nacionalnih akcionih planova za energetsku efikasnost (NEEAP) i obnovljive izvore energije (NREAP). Prve dve faze NEEAP-a realizovane su između 2010. i 2015. godine, pri čemu je većina zemalja ostvarila oko 50% ciljeva; Albanija u transportu, BiH u sektoru stanovanja, a Srbija i Severna Makedonija u industriji (Filipović i Ignjatović, 2022). Treća faza (2017–2020) obuhvatila je Srbiju, Crnu Goru i delimično Severnu Makedoniju.

Inicijativa Berlinski proces (pokrenuta 2014. od strane Nemačke) dodatno je podstakla reforme, a lideri Zapadnog Balkana su se 2020. obavezali na sprovođenje Zelene agende. Ipak, napredak je bio ograničen, a fosilna goriva zadržala dominantan udeo. Prema Frey (2024), uzroci su hronično niska ulaganja, loše upravljanje i geopolitičke prepreke. Ipak, raste svest o obnovljivim izvorima i usklađivanju zakonodavstva sa EU standardima. Cena ugljenika postaje ključni instrument za dekarbonizaciju, a EU i Energetska zajednica predlažu zajednički regionalni model (engl. *Western Balkans Emissions Trading System*, WB ETS) radi stvarnog određivanja cene emisija ugljen-dioksida (CO₂) (Kušljugić i saradnici, 2023). Prvi korak ka tome je usvajanje Mehanizma za prilagođavanje granica ugljenika (engl. *Carbon Border Adjustment Mechanism*, CBAM), koji će funkcionisati kao carina na uvoz električne energije i proizvoda s visokim ugljeničnim otiskom (čelik, cement, đubriva, aluminijum, vodonik), koji stupa na snagu do 2026. godine (European Commission, 2023). Tokom prelazne faze predviđeno je testiranje metodologije za izračunavanje emisija i prilagođavanje cena. Uvođenje CBAM-a imaće različite posledice po zemlje Zapadnog Balkana, u zavisnosti od njihove izvozno-energetske strukture i stepena sprovedenih klimatskih mera.

Bosna i Hercegovina

U Bosni i Hercegovini (u daljem tekstu: BiH), termoelektrane učestvuju sa oko 60% u proizvodnji električne energije, hidroelektrane sa 36,7%, dok vetroelektrane i solarna energija čine svega 3,5%. Energetska tranzicija formalno je započeta 2013. godine usvajanjem Strategije za prilagođavanje klimatskim promenama i niskougljenični razvoj, ali većina ciljeva još uvek nije ostvarena. Prema Kušljugiću i Miljeviću (2023), u BiH prevladuje skepticizam prema obnovljivim izvorima energije, uz percepciju da EU kroz dekarbonizaciju nameće zavisnost i štiti sopstvene interese. Energetski sektor se i dalje oslanja na nisku cenu električne energije, koja se održava zahvaljujući izvoznim prihodima. Međutim, ova cena ne uključuje troškove za kontrolu lokalnog zagađenja (sumpor-dioksid - SO₂, azotni oksidi - NO_x, prašina), što ugrožava javno zdravlje. Uvođenje CBAM-a značilo bi dodatni trošak od 60 EUR/MWh, čime bi se smanjili izvozni profiti i sposobnost subvencionisanja domaćinstava i malih preduzeća.

Tehničko i finansijsko stanje termoelektrana i rudnika je loše, postrojenja su prosečno starija od 40 godina, posluju s gubicima, a pouzdanost je niska (npr. TE Ugljevik je 2022. zabeležila 22 havarije u osam meseci). BiH raspolaže značajnim potencijalom za obnovljive izvore (vetar, sunce, hidroenergiju i biomasu) koji bi uz postojeće hidrokapacitete mogli omogućiti punu tranziciju ka 100% OIE. Prema Miljeviću i Ribiću (2022), BiH ima pristup različitim izvorima finansiranja, uključujući IPA fondove, Zeleni klimatski fond (GCF) i podršku međunarodnih finansijskih institucija (Evropska investiciona banka, Evropska banka za obnovu i razvoj, Svetska banka). Ipak, tranzicija je odložena usled političke nespremnosti da se uhvati u koštac sa kompleksnim izazovima. Većina aktivnosti potiče od pojedinačnih kompanija, dok su investicije ograničene zbog regulatornih prepreka, uprkos visokom interesovanju investitora.

Srbija

Većinu električne energije, Srbija proizvodi iz domaćih izvora, pri čemu se oko 70% oslanja na lignit, dok hidroelektrane čine ostatak. Udeo vetroenergije je, uprkos rastu, 2021. godine iznosio svega 2,8%. Tradi-

cionalna energetska povezanost sa Rusijom dodatno otežava diversifikaciju sektora. Iako je Nacionalni plan za obnovljive izvore energije usvojen 2013. godine, većina mera nije realizovana. Novi Integrisani energetska i klimatski plan do 2030. (CEEnergynews, 2024) postavlja cilj od 45% OIE, što stručnjaci ocenjuju kao preambiciozno i politički motivisano (Energetski portal, 2024a). Uprkos ukorenjenom uverenju da je energija iz uglja jeftinija, stvarni troškovi su visoki. Termoelektrane u Srbiji su najveći regionalni emiteri SO₂, gotovo 300.000 tona u 2023., uz rast u odnosu na 2022. godinu (Energetski portal, 2024b). Zdravstvene posledice uključuju 2.326 hiljade preuranjenih smrti, 666.939 izgubljenih radnih dana i 5,16 milijardi evra troška (Climate Action Network Europe, 2021). Ipak, CBAM mehanizam verovatno neće značajno uticati na Srbiju, s obzirom na njen mali izvoz struje u EU (Taylor, 2023).

Srbiju karakteriše veliki potencijal za proizvodnju električne energije iz obnovljivih izvora, posebno iz biomase i hidroenergije. Međutim, da bi se povećala upotreba obnovljivih izvora energije, potrebno je doneti određene političke odluke i uspostaviti pravni okvir sa realnim ciljevima koji bi omogućili odgovarajuću energetska tranziciju. Pored IPA pretpripravnih fondova EU, Srbija ima na raspolaganju sredstva iz programa UN-a za smanjenje emisija CO₂, fondove Evropske banke za obnovu i razvoj (EBRD), Investicionog okvira za Zapadni Balkan i manje fondove za finansiranje projekata energetske efikasnosti. Ipak, i dalje postoji manjak velikih projekata vetroelektrana, solarnih elektrana i hidroelektrana. Da bi se ovo promenilo, u narednom periodu bi trebalo sprovesti određene mere za smanjenje rizika ulaganja u obnovljive izvore energije. Prema Radosavljeviću (2020), to uključuje pojednostavljenje procedura, proširenje mreže, stabilne podsticaje do 2030. godine i olakšanje korporativnih ugovora o kupovini energije. Neophodna je i javna kampanja za smanjenje otpora prema tranziciji, uz procene da bi smanjenje rizika moglo prepoloviti troškove finansiranja OIE.

Crna Gora

Unatoč dugoj tradiciji Crne Gore u korišćenju obnovljivih izvora energije, njihov ukupan udeo u proizvodnji električne energije iznosi 53,98%. Energetska tranzicija napreduje sporo, jer se dekarbonizacija uglavnom percipira kao spoljni zahtev EU. Prema Taylor (2023) izvoz električne energije značajno je porastao nakon puštanja u rad podmorskog kabla ka Italiji, te Crna Gora sada izvozi više od 50% ukupne proizvodnje.

Smernice za tranziciju navedene su u Operativnom programu za sprovođenje Strategije pametne specijalizacije 2021–2024, dok je Mapa puta ka cirkularnoj ekonomiji izrađena 2022. godine u saradnji sa Privrednom komorom Crne Gore i Programom Ujedinjenih nacija za međunarodni razvoj (engl. *United Nations Development Programme*, UNDP). Prema Government of Montenegro (2021), energetska sektor suočava se s preprekama vezanim uz nedostatak veze između energetike i inovacija, građani i privreda nemaju pristup ključnim informacijama, ne postoji plan za zatvaranje Termoelektrane Pljevlja koja posluje nelegalno kao ni za prekvalifikaciju radnika, a istraživački projekti trpe zbog nepovezanosti i ograničenog finansiranja (pristup „odozdo nagore“).

Crna Gora je 2020. godine uvela mehanizam za trgovinu jedinicama emisije po ceni od najmanje 24 evra po toni ekvivalenta ugljen-dioksida. Korisnik sredstava je Fond za zaštitu životne sredine, a prikupljena sredstva moraju biti usmerena na projekte obnovljivih izvora energije. Prema UNDP-u (2022), Crna Gora ima nekoliko dostupnih izvora finansiranja za energetska tranziciju: državna sredstva se obezbeđuju putem Elektroprivrede Crne Gore, individualnih fondova, direktija i pojedinačnih banaka. Sredstva takođe obezbeđuju EU putem Pretpripravnih fondova, Francuska razvojna agencija kroz podršku projektima održivog i inkluzivnog razvoja u Crnoj Gori, Regionalna inicijativa za cirkularnu ekonomiju u Turskoj i na Zapadnom Balkanu, kao i Evropska banka za obnovu i razvoj (EBRD).

Albanija

Gotovo 99% svojih potreba za električnom energijom, Albanija zadovoljava iz hidroenergije, čime spada među energetske najodrživije zemlje regiona (Balkan Green Energy News, 2023). Ipak, ovakva zavisnost čini je ranjivom na klimatske promene, posebno u sušnim periodima kada dolazi do konkurencije za vodne resurse s poljoprivredom. Prema podacima European Training Foundation (2022), godišnja proizvodnja električne energije u Albaniji iznosi 5,8 TWh, što pokriva 79% potrošnje, dok se ostatak uvozi. Gubici u mreži dostižu 26%, a emisije CO₂ po glavi stanovnika su niske (1,94 tone). Zemlja poseduje rezerve uglja, nafte i gasa, ali su slabo iskorišćene.

Glavni izazovi u sektoru su diverzifikacija izvora energije, povećanje efikasnosti i upravljanje mrežom. Ključni infrastrukturni koraci uključuju Transjadranski gasovod (TAP) i planiranu izgradnju gasne termoelektrane (GTPP) snage 500 MWe kod Korče, koja bi smanjila korišćenje biomase i doprinosila smanjenju загаđenja. Pored hidroenergije, Albanija raspolaže značajnim potencijalom za razvoj solarne i vetroenergije, naročito u planinskim predelima. Poslednjih godina uvedeni su tržišni mehanizmi za podršku obnovljivim izvorima, uz razvoj regulatornog okvira i formiranje nadležnog tela za sprovođenje aukcijskih procedura.

Severna Makedonija

U velikoj se meri Severna Makedonija oslanja na lignit, gas niskog kvaliteta i hidroenergiju, ali i dalje značajno uvozi električnu energiju. U 2022. godini proizvedeno je 5.634 GWh, a dodatnih 1.471 GWh je uvezeno (CEE Bankwatch Network, 2023). Strategija razvoja energetike 2020–2040 predviđa tri scenarija, pri čemu zeleni scenario podrazumeva potpuno napuštanje uglja do 2025. godine, čime bi Severna Makedonija bila prva zemlja regiona sa takvim planom. Nacionalni energetske i klimatski plan (NECP) iz 2022. prati ovaj progresivni pravac i uključuje zatvaranje termoelektrana Oslomej i Bitola. Ipak, prema CEE Bankwatch Network (2023), energetske sektor Severne Makedonije suočen je s nizom nedoslednosti: eksploatacija rudnika Živojno produžava rad TE Bitola za više od decenije; NECP predviđa novu termoelektranu na fosilna goriva, uz dodatne gasne elektrane koje nisu deo strateških dokumenata; uvoz gasa zavisi od Bugarske i koristi se uglavnom u industriji i toplanama; a cilj za obnovljive izvore do 2020. smanjen je sa 28% na 23%, dok je ostvareno 19,2%.

Od 2020. godine, Severna Makedonija je pustila u rad vetropark Bogdanci (36,8 MW), uz podršku EU i KfW razvojne banke. Vetropark Bogoslovec (36 MW) počeo je s radom 2023. Fotonaponski kapaciteti dostigli su 144 MW krajem 2022. godine, s daljim rastom. Strategija predviđa dodatnih 998 MW hidroenergije do 2040. Distribicioni gubici iznosili su 13,5% u 2022, dok energetska efikasnost ostaje nizak prioritet. Stari sistemi grejanja povećavaju troškove domaćinstvima. U skladu s ciljevima Energetske zajednice, Severna Makedonija mora povećati udeo OIE na 38% i smanjiti emisije GHG za 82% u odnosu na 1990. godinu, što zahteva ambiciozne reforme i ulaganja.

Kosovo*

Ukupni instalirani kapacitet na Kosovu* iznosi 1.568 MW, od čega se 82% zasniva na lignitu (Bankwatch Network, n.d.). Poslednjih godina pokrenuti su novi kapaciteti obnovljivih izvora, posebno vetroelektrane i hidroelektrane, ali sektor se i dalje suočava s brojnim izazovima. Postrojenja su zastarela, česti su kvarovi, a sektor transporta gotovo da ne koristi obnovljive izvore zbog neusaglašenosti sa direktivama EU (2009/28/EC i 2018/2001). Energetska intenzivnost, iako smanjena za 40% u protekloj deceniji, i dalje premašuje regionalni prosek za 25%, a emisije gasova staklene bašte (engl. *Greenhouse Gases*, GHG) iz privrede su više nego duplo veće od proseka EU. S obzirom na skroman izvoz električne energije u EU, CBAM verovatno neće imati značajan uticaj.

Od 2020. godine, albansko-kosovski blok (AK blok) funkcioniše kao nezavisno regulatorno telo, a us-

postavljanjem jedinstvene albanske berze električne energije (ALPEX) ojačana je tržišna integracija (IFC, 2020). U tom okviru razmatraju se i tehnološke inovacije poput zelenog vodonika, geotermalne energije i malih modularnih reaktora. Kosovo* ima visoku energetska povezanost u regionu – neto kapaciteti za uvoz i izvoz iznose 1.316 MW i 1.175 MW, čime je stopa interkonekcije 78%, što premašuje ciljeve EU do 2030. godine. Ipak, s obzirom na višedecenijski izostanak investicija, sektor zahteva temeljnu transformaciju i značajna finansijska ulaganja radi povećanja efikasnosti, sigurnosti i otpornosti sistema, kao i bolje zaštite potrošača.

Rezultati istraživanja

Analiza pokazuje da su zemlje Zapadnog Balkana u različitim fazama spremnosti za sprovođenje zelene tranzicije. Iako je zajednički imenitelj izražena zavisnost od uglja i niska diversifikacija energetske miksa, ipak postoje značajne razlike u dostignutoj zelenoj tranziciji. Nalazi se mogu sistematizovati kroz četiri dimenzije modela: regulatorni okvir, institucionalni kapacitet, energetska miks i finansijski instrumenti. Na osnovu navedenih dimenzija, sprovedena je procena spremnosti zemalja Zapadnog Balkana, prikazana u sledećoj tabeli.

Tabela 1 - Procena spremnosti zemalja Zapadnog Balkana za zelenu tranziciju po ključnim indikatorima

Indikatori	BiH	Srbija	Crna Gora	Albanija	Severna Makedonija	Kosovo*
Regulatorni okvir						
Nacionalna strategija za klimatske promene / zelenu tranziciju	Strategija postoji, ali neprimenjiva u celosti	Strategija usvojena, NECP usvojen 2024. sa projekcijama do 2050. godine, zakon o klimi usvojen	Fragmentiran regulatorni okvir, NECP u izradi, smernice kroz Operativni program i Mapu puta za cirkularnu ekonomiju	Usvojena Zelena strategija 2023–2025, u toku implementacija tržišne podrške za OIE kroz aukcijske mehanizme	NECP i strategija usvojeni, politički okvir razvijen	Regulatorni okvir u izradi, fali usklađenost sa EU direktivama za biogoriva
Usklađenost sa EU pravnim okvirom (NEEAP, NECP, direktive)	Delimična usklađenost, NECP izrađen ali neoperativan	Srednji do visok nivo usklađenosti	Nizak nivo usklađenosti s EU direktivama	Usklađenost u porastu, NECP izrađen	Visok stepen usklađenosti sa EU	Veoma nizak stepen
Institucionalni kapacitet						
Postojanje nadležnog tela za zelenu tranziciju (ministarstvo/agencija)	Entitetska fragmentacija, slaba koordinacija na državnom nivou	Postoji centralizovano ministarstvo, radna grupa za ZO	Postoji, ali nedovoljna koordinacija	Postoji funkcionalna agencija, član SBFN, uspostavljanje tela za sprovođenje programa OIE	Postoji, saradnja sa EBRD i GGF	Postoje tela, ali nejasne nadležnosti

Transparentnost i dostupnost podataka za planiranje i monitoring	Loša transparentnost i nedovoljno javno dostupni podaci	Delimična dostupnost, uvođenje sistematizovanih izveštaja	Ograničena dostupnost podataka	Poboljšana dostupnost podataka	Postoje javni izveštaji i baze	Ne postoji centralizovani sistem podataka
Energetski miks						
Udeo OIE u proizvodnji električne energije	~40% (dominantno hidro)	~30% (pretežno hidro, vetar 2,8%)	~54% (dominantno hidro)	~99% (hidro)	~20%	<10% (novi vetro i hidro kapaciteti u razvoju)
Udeo uglja u proizvodnji električne energije	~60%	~70%	~40%	~0%	~50%	~90%
Kapacitet OIE po stanovniku (kW/stan.)	Niska	Niska	Niska	Srednja	Niska	Veoma niska
Finansijski instrumenti						
Postojanje GSSS instrumenata	ESG obveznice (Naša Banka, 2023, 2024)	Zelene obveznice (Eurobond 2021, 1 mlrd EUR)	Ne	Ne	Zelene obveznice (2023)	Ne
Ukupan broj i vrednost izdanja	2 izdanja, ukupno 5,73 mil. EUR	1 izdanje, 1.000 mil. EUR	0	0	1 izdanje, 10 mil. EUR	0
Učešće međunarodnih organizacija	Visoko (grantovi i IFI učestvuju u velikoj meri)	Visoko (snažna podrška IFI, NGFS članstvo NBS, UN programi za smanjenje emisije CO ₂ , fondovi za EE projekte)	Niska mobilizacija sredstava, prisustvo IFI, IPA fondova, EBRD, Francuske razvojne agencije i regionalnih inicijativa	Pristup fondovima (IPA III), SBFN članstvo	Podrška IFI, aktivan energetski fond, finansiranje OIE projekata kroz EU, KfW i druge partnere	Niska uključenost IFI, uglavnom bilateralna pomoć
Postojanje nacionalnog zelenog okvira za obveznice	Ne	Postoji okvir, evaluacija, SPO, ESG rejting	Ne	U pripremi	U pripremi	Ne

Izvor: obrada autorki

Opšti nalazi ukazuju na to da su zemlje Zapadnog Balkana u različitom stepenu razvijenosti kada je reč o spremnosti za zelenu tranziciju. Dok pojedine zemlje, poput Srbije i Severne Makedonije, pokazuju relativno više ocene u regulatornom okviru i institucionalnim kapacitetima, druge zaostaju zbog fragmentiranih institucija i nedostatka zakonodavne usklađenosti. Energetski miks ostaje glavni izazov u

većini zemalja, sa izraženom zavisnošću od uglja i niskim udelom obnovljivih izvora, dok je napredak u oblasti finansijskih instrumenata i dalje ograničen i u početnim fazama razvoja.

U pogledu usklađenosti sa Zelenom agendom i pravnom stečevinom EU, Srbija i Severna Makedonija su ostvarile najvidljiviji napredak. Srbija je usvojila zakon o klimatskim promenama, razvila NECP i kreirala okvir za emisiju zelenih obveznica, uključujući evaluaciju ESG rejtinga. Severna Makedonija je, osim što je usvojila NECP, razvila i jasan politički okvir za podršku tranziciji. Bosna i Hercegovina, iako poseduje strategiju, suočava se s institucionalnom fragmentacijom koja ograničava njezinu efikasnu implementaciju. Kosovo* i Crna Gora zaostaju u usklađivanju zakonodavstva, dok Albanija pokazuje napredak donošenjem Zelene srednjoročne strategije.

Institucionalna infrastruktura pokazuje nizak stepen koordinacije između nadležnih tela i često ograničene tehničke i administrativne kapacitete. Srbija i Severna Makedonija imaju formirane stručne radne grupe i nadležna ministarstva sa jasno definiranim nadležnostima. U BiH, nadležnosti su raspršene na entitetske razine, što otežava sprovođenje politika. Albanija i Crna Gora su uspostavile institucije, ali bez dovoljnog kapaciteta ili međusobne koordinacije. Kosovo* nema jasan institucionalni okvir, a nedostatak centralizirane baze podataka dodatno ograničava planiranje. Pristup relevantnim podacima i transparentnost takođe su slabo razvijeni u gotovo svim zemljama. Zavisnost o uglju ostaje ključna prepreka za dekarbonizaciju, posebno u Srbiji, BiH, Severnoj Makedoniji i na Kosovu*, gde termoelektrane i dalje dominiraju proizvodnjom. Crna Gora ima uravnoteženiji miks, ali bez značajnog udela solarne i vetroenergije. S druge strane, Albanija se ističe kao pozitivan primer, jer 99% električne energije proizvodi iz hidroelektrana. Ipak, udeo solarne i vetroenergije u celokupnom energetsom miksu regiona ostaje marginalan – ispod 5%. Ukupan kapacitet OIE po stanovniku u regionu je 15 puta niži u odnosu na prosek EU.

Zelene i ESG obveznice su u začetku. Srbija je prva i jedina zemlja izvan EU koja je izdala zelenu euroobveznicu u iznosu od 1 mlrd EUR, dok su BiH i Severna Makedonija pokrenule manja izdanja ESG i zelenih obveznica. Međutim, prisutnost međunarodnih finansijskih institucija (EBRD, GGF, IPA III) pruža značajan potencijal za podršku. Nedostatak formalnih okvira za zelene obveznice u većini zemalja predstavlja prepreku za širu primenu ovih instrumenata.

Zaključak

Zelena tranzicija na Zapadnom Balkanu odražava jedan od najvažnijih izazova za budućnost ekonomskog, društvenog i političkog razvoja regiona. Analiza sprovedena u ovom radu pokazala je da zemlje Zapadnog Balkana ulaze u tranziciju sa izraženim strukturnim slabostima koje proističu iz visoke zavisnosti od fosilnih goriva, pre svega uglja, niske diversifikacije energetske miksa, kao i institucionalnih i finansijskih ograničenja. Regulatorni okvir za sprovođenje zelene tranzicije u većini zemalja formalno je uspostavljen kroz strategije i planove usklađene sa ciljevima Evropskog zelenog plana i Zelene agende za Zapadni Balkan. Međutim, vidljivo je da zakonodavne reforme nisu uvek praćene doslednom implementacijom, što ukazuje na potrebu za jačanjem pravne sigurnosti, boljom koordinacijom između različitih nivoa vlasti i efikasnijom primenom postojećih propisa. Srbija i Severna Makedonija ostvarile su najznačajniji napredak u normativnom usklađivanju, dok Bosna i Hercegovina, Crna Gora, Albanija zaostaju, prvenstveno zbog institucionalne fragmentacije i ograničenih administrativnih kapaciteta. Institucionalni kapaciteti za sprovođenje zelene tranzicije generalno su nedovoljni i neujednačeni. U većini zemalja regiona uočava se slab nivo među resorne saradnje, nedostatak specijalizovanih stručnih tela i ograničen pristup pouzdanim podacima neophodnim za izradu i praćenje politika održivog

razvoja. Odsustvo sistemske podrške inovacijama i nedovoljno razvijeni mehanizmi za participaciju civilnog društva dodatno usporavaju procese tranzicije.

Kada je reč o energetsom sektoru, zavisnost od uglja i termoelektrana ostaje dominantna karakteristika svih zemalja osim Albanije. Udeo varijabilnih obnovljivih izvora energije u proizvodnji električne energije i dalje je nizak, u proseku ispod 5%, dok je instalirani kapacitet obnovljivih izvora po stanovniku čak petnaest puta manji nego u državama članicama EU. Poređenje sa EU jasno ukazuje na ogromne razlike u stepenu dekarbonizacije i energetske modernizacije. Problemi poput zastarele infrastrukture, visokih emisija gasova sa efektom staklene bašte i niske energetske efikasnosti dodatno otežavaju energetske tranziciju i ugrožavaju ekološku bezbednost regiona.

Finansijski aspekt zelene tranzicije pokazuje slične izazove. Iako su međunarodni mehanizmi finansiranja, poput IPA III fonda, Investicionog okvira za Zapadni Balkan, i zelenih finansijskih instrumenata (GGF, REEP), dostupni, njihova iskorišćenost ostaje ograničena. Nedostatak razvijenog tržišta zelenih obveznica i spor razvoj ESG standarda dodatno ukazuju na potrebu za jačanjem kapaciteta finansijskog sektora i unapređenjem regulatornih okvira za održivo finansiranje. Pojava mehanizama poput CBAM dodatno komplikuje položaj zemalja regiona, jer ih suočava sa direktnim ekonomskim posledicama nepravovremenog sprovođenja dekarbonizacije. Uslovi izvoza u EU postaju sve stroži, a zemlje koje ne uspeju da se prilagode novim zahtevima rizikuju gubitak konkurentnosti i tržišnih pozicija. Uprkos navedenim izazovima, zelena tranzicija nudi jedinstvenu razvojnu priliku za zemlje Zapadnog Balkana. Kroz diversifikaciju izvora energije, unapređenje regulatornih okvira, jačanje institucionalnih kapaciteta i efikasnije korišćenje dostupnih finansijskih mehanizama, region može postati atraktivniji za investicije, unaprediti kvalitet života građana i ostvariti dugoročno održiv ekonomski rast. Budućnost zelene tranzicije na Zapadnom Balkanu zavišće od dosledne implementacije reformi, sposobnosti institucija da razvijaju inovativne pristupe održivosti, kao i od spremnosti društava da prepoznaju značaj ovog procesa za svoju ekonomsku, ekološku i socijalnu otpornost.

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POTENTIALS AND CHALLENGES OF GREEN TRANSITION IN THE WESTERN BALKANS

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Abstract: *The green transition is a long-term process that requires transforming the outdated fossil fuel-based economic model into a circular economy model. This paper analyzes the readiness of Western Balkan countries to implement green transition, in the context of obligations arising from the European Green Deal and the Green Agenda. The aim is to determine the capacities and challenges related to the regulatory framework, institutional infrastructure, energy mix, and the availability of sustainable financial instruments. A comparative analysis of secondary data has been applied, and the results indicate a high dependence on coal (over 70% in Serbia), limited use of renewable sources (less than 5% in most countries), and underutilization of EU financial mechanisms. Institutional capacities are uneven, and ESG standards are only in the early stages of implementation. The conclusion is that green transition is a strategic challenge, but also an opportunity for the modernization of regional economies, highlighting the need for a stronger regulatory framework, more transparent governance, and better utilization of available investment funds.*

Keywords: green transition; green bonds; Green Agenda for the Western Balkans; carbon footprint

JEL: G1, Z0, Q0, Q5

Introduction

Western Balkan countries are candidates for accession to the European Union (with the exception of Kosovo*, which holds the status of a potential candidate) and are faced with the task of aligning their legal frameworks, economic strategies, and political initiatives with European Union (hereinafter: EU) standards. In this context, the implementation of sustainable financial policy holds particular significance, as it is crucial for initiating the transition toward sustainable economies. The EU is facing serious challenges in the areas of environmental protection, climate change, geopolitical instability, and widespread socio-economic inequalities. Vitošević et al. (2020) emphasize that climate change and environmental protection issues have introduced new challenges to economic development, with the energy sector, as the largest emitter of carbon dioxide, under the greatest pressure to implement reforms.

The adoption of the European Green Deal laid the foundation for the integration of sustainable finance in EU member states. In order to involve neighboring regions in achieving the goals of this plan, the Green Agenda for the Western Balkans was adopted, as analyzed by Filipović and Ignjatović (2022). This agenda introduces a new development concept that encourages key initiatives, such as the transition to a circular economy. One of the most important instruments supporting this transition process are green bonds and other sustainable financial instruments, which have gained significant popularity as tools for financing projects aimed at reducing carbon emissions and enhancing environmental sustainability in the region. Green bonds are the most commonly used form of investment and the most developed instrument among GSSS bonds (green, social, sustainable, and sustainability-linked bonds). Their use is increasingly widespread in financing emission reduction projects, sustainable development, and investments in cleaner production, thus contributing to the achievement of the 2°C target defined by the Paris Agreement (Olgić Draženović, 2025). In addition to financial instruments, ESG standards play an important role in the transition to sustainability, serving as a key pillar of business resilience in the context of the green transition (Suljić Nikolaj et al., 2024). According to Petrović Tomić (2023), ESG criteria (environmental, social, and governance) are no longer merely a matter of ethical commitment, but a strategic necessity for long-term competitiveness and effective risk management. Given that all Western Balkan countries aspire to EU membership, the Green Deal outlines measures that should be integrated into the accession negotiation chapters, as well as into economic cooperation programs based on existing Stabilization and Association Agreements (Vasilkov et al., 2021). Therefore, it is of crucial importance to explore the dynamics of the green transition in the Western Balkan countries, observed through the lens of their institutional, regulatory, and economic capacities, as well as their readiness to implement the requirements set by the Green Deal and the regional Green Agenda. This paper focuses on analyzing the key challenges in the process of moving from a conventional fossil fuel-based development model to sustainable, decarbonized, and circular economic models.

The aim of this paper is multifaceted: (1) to analyze the regulatory and institutional framework of the green transition in the Western Balkan countries, (2) to identify the challenges and potentials of implementing the Green Agenda in light of the goals of the Green Deal, (3) to conduct a comparative analysis of energy policies and the availability of financial instruments for sustainable development, and (4) to assess the level of readiness of individual countries to carry out the green transition.

* [1] All reference to Kosovo, whether the territory, institutions or population, in this text shall be understood in full compliance with United Nations Security Council Resolution 1244 and without prejudice to the status of Kosovo.

The first part of the paper analyzes key EU legal acts relevant to the green transition in the Western Balkans, including the Green Deal and the Green Agenda for the Western Balkans. The second part provides a theoretical discussion of the green transition concept, with a particular focus on the Western Balkans. The third part offers an overview of the energy sector and an analysis of the current development of the energy transition in the region, while the fourth and most comprehensive part of the paper provides a detailed analysis of the energy sector in each Western Balkan country. The fifth part contains the conclusion.

Methodology

This paper is based on a qualitative-descriptive and comparative research approach, which enables an assessment of the readiness of Western Balkan countries to implement the green transition. Secondary data were used from relevant academic and professional literature, official documents of the countries, EU institutions, as well as reports from international financial organizations such as the Organization for Economic Cooperation and Development (OECD), European Environmental Agency (EEA), European Bank for Reconstruction and Development (EBRD), World Bank (WB), along with national strategic documents of the countries in the region: National Energy and Climate Plan (NECP), National Energy Efficiency Action Plan (NEEAP), energy development strategies, and data from energy companies. Statistical data from databases such as Eurostat and the European Training Foundation (ETF) were also utilized.

For the purpose of analyzing the readiness of Western Balkan countries to implement the green transition, a comparative method and a descriptive-analytical approach were used, enabling the comparison of key indicators and policies across countries. Based on the collected data, an interpretation was made of the existing legal and institutional frameworks, energy mixes, and the level of development of sustainable financial instruments. The analysis covers the period from 2019 to 2024, in order to include key implementation processes of the Green Deal and the Green Agenda for the Western Balkans, which were initiated at the end of 2019 and during 2020. This methodological framework allows for an assessment of the current state and the identification of key factors influencing the effectiveness of green transition policy implementation in the countries of the region.

The structuring of findings is based on four key dimensions: (1) regulatory framework, (2) institutional capacity, (3) energy mix, and (4) availability and applicability of financial instruments for the green transition. This model provides a holistic overview of the factors that determine the potential for successful implementation of the Green Agenda for the Western Balkans.

The European Green Deal and the Green Agenda for the Western Balkans

In 2019, the EU adopted the European Green Deal, which the European Commission (2019b) defines as a new growth strategy aimed at transforming Europe into a fair and prosperous society, with a modern, resource-efficient, and competitive economy. The goal is to achieve net-zero greenhouse gas emissions by 2050, and to decouple economic growth from increased use of natural resources. The implementation of the Green Deal requires numerous reforms and legislative improvements to ensure clean energy across all sectors: ranging from the economy and industry, to production and consumption, infrastructure, transport, food systems, agriculture, construction, taxation, and social services. Through this approach, the EU aims to leverage its collective capacity to transform society and the economy, making them gradually more sustainable, while protecting, securing, and enhancing natural capital, public health, and citizens' well-being from environmen-

tal risks. At the same time, the objective is to ensure a just social transition, in which no individual or region is left behind. The initiatives of the Green Deal include (Jadreškić, 2024):

- The EU Strategy on Climate Change Adaptation, as a long-term vision for a climate-resilient society by 2050;
- The EU Biodiversity Strategy for 2030, aimed at contributing to the recovery of biodiversity in Europe;
- The Farm to Fork Strategy, focused on achieving climate neutrality through sustainable food production;
- The European Industrial Strategy, which supports industry as a driver of change, innovation, and growth;
- The Circular Economy Action Plan, serving as a framework for transitioning to sustainable models of production and consumption in the post-pandemic recovery;
- The Batteries and Waste Regulation, aimed at establishing a circular economy throughout the entire battery lifecycle, from design to recycling;
- The Just Transition, which provides financial and technical support to regions affected by the shift to a low-carbon economy;
- Clean, affordable, and secure energy, focused on decarbonizing the energy sector;
- The EU Chemicals Strategy for Sustainability, aimed at protecting health, enhancing competitiveness, and promoting a toxic-free environment;
- The Forest and Deforestation Strategy, which seeks to balance environmental, social, and economic aspects of sustainable forest management.

The European Commission (2019a) emphasizes that the Green Deal plays a key role in implementing the UN 2030 Agenda and the Sustainable Development Goals. For the green transition to be successful, it is essential that the countries neighboring the EU also take concrete actions – this contributed to the adoption of the Green Agenda for the Western Balkans. According to the European Commission (2020), this agenda is a development strategy focused on climate-related challenges and the alignment of Western Balkan regulations with EU standards. It was adopted at the Sofia Summit in 2020, with the participation of all six countries of the region.

The Green Agenda is based on the Green Deal and its investment framework, and is funded through IPA (Instrument for Pre-Accession Assistance) funds. A support package of €9 billion is planned to finance environmental priorities within the framework of economic recovery until 2027 (Vasilkov et al., 2021). According to the same authors, countries in the region should develop cooperation at all levels, in line with EU legislation and the objectives of the Green Deal. The OECD (2022) reports that carbon intensity in Serbia, Bosnia and Herzegovina, and Kosovo* is two to three times higher than the OECD average. High pollution levels and low energy efficiency are the result of coal dependency and outdated energy infrastructure.

Pillars of the Green Agenda for the Western Balkans (European Commission, 2020):

1. Decarbonization (climate action, clean energy, and sustainable transport)

2. Circular economy
3. Fighting pollution of water, air, and soil
4. Sustainable food production
5. Biodiversity (protection and restoration of nature and ecosystems).

These pillars will be explained in detail below; however, the analysis of the green transition potential in the remainder of the paper will focus on Pillars 1 and 3.

The Western Balkans faces pronounced consequences of climate change, making decarbonization a key priority for the region. Reducing greenhouse gas emissions and transitioning to renewable energy sources are essential, particularly given the region's dependency on coal and outdated energy infrastructure. In this context, EU support comes through carbon quotas and carbon pricing mechanisms, in line with its climate legislation. The role of the circular economy is gaining additional importance, as it contributes to waste reduction, more efficient resource use, and the development of sustainable production and consumption systems. Regional agreements are also being planned to reduce plastic pollution, especially in protecting marine ecosystems (UNEP, 2021). Air pollution is another urgent concern, as pollution levels in the region are among the highest in Europe (UNEP, 2021). Alignment with EU standards in air, water, and wastewater quality, along with modernization of monitoring and management systems, forms the foundation for improving public health. Given that agriculture accounts for around 10% of GDP in the region's countries, it is important to promote sustainable rural development that improves food quality and safety, reduces waste, and encourages organic production (Županić et al., 2021; Smart Kolektiv, 2021). These efforts also contribute to the gradual alignment with European standards on food safety and animal welfare. Biodiversity protection is another strategic goal, especially considering the region's rich natural resources. In this direction, plans are being developed for habitat preservation and reforestation (Smart Kolektiv, 2021). According to Filipović and Ignjatović (2022), the successful implementation of the Green Agenda for the Western Balkans requires the development of national action plans that include coordinated projects across all key areas, with the aim of achieving a sustainable economy, a better living environment, and the creation of new jobs.

Green Transition in the European Union and the Western Balkans

The green transition was developed as a response to climate change and environmental degradation, with the aim of promoting growth through green technologies, sustainable industry, and pollution reduction (European Commission, 2019). Striving for fairness and inclusivity, it transforms climate challenges into development opportunities. In this context, ESG principles are becoming an increasingly important part of corporate strategies. According to Petrović Tomić (2023), their implementation contributes to both sustainability and competitiveness. Although Western Balkan countries do not yet implement non-financial reporting, their connection to the EU market makes alignment with ESG standards increasingly important. Companies in the region must adapt proactively to maintain their competitiveness. At the same time, sustainable finance is recognized as a key driver of economic resilience, with financial institutions playing an increasingly active role (European Environmental Agency, 2023). As noted by Sredojević and Sredojević (2021), the banking sector is shifting from a reactive to a proactive approach, following European regulatory trends.

The green transition will have a strong economic and social impact – new jobs will be created while some will disappear, and education and healthcare systems will need to adapt. According to Rodríguez-Pose and Bartalucci (2024), the costs of the transition are not evenly distributed and often affect already vulnerable regions, while discussions on inequality are largely focused on the consequences of inaction in addressing climate change. Nevertheless, the transition also brings significant opportunities for the development and expansion of green technologies (European Commission, 2019). For over two decades, the OECD has been implementing policies supporting the green transition in the Western Balkans, assessing the competitiveness of small and medium-sized enterprises and assisting the public, private, and civil sectors in the shift toward sustainable models, with a focus on climate resilience, clean energy, efficient resource use, and ecosystem protection (OECD, n.d.).

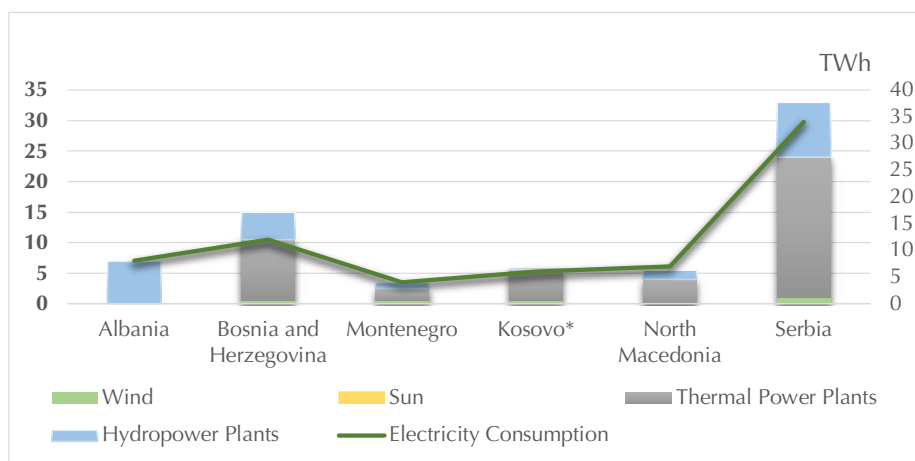
The implementation of the Green Agenda for the Western Balkans is coordinated by the Regional Cooperation Council (RCC), the overarching institution of the South-East European Cooperation Process (SEECP). According to the Action Plan for the Implementation of the Sofia Declaration (2021–2030), the Council is tasked with connecting relevant institutions, enabling the exchange of experiences, and identifying opportunities to scale successful initiatives across the region, including the development of a framework for sustainable finance (Regional Cooperation Council, n.d.). In this context, green bonds are becoming an increasingly important instrument for financing the green transition. Although their issuance involves additional costs, such as documentation preparation and credit rating assessments, they offer numerous benefits, ranging from environmental impact to greater transparency and improved risk management. Serbia was the first in the region to issue a green Eurobond, with the raised funds directed toward sustainable development projects, energy efficiency, renewable energy sources, and pollution reduction (Olgjić Draženović, 2025).

The Energy Sector in the Western Balkans

The energy sector has significant economic, social, and political influence in the Western Balkans. State-owned energy companies, as the main producers and suppliers, are among the largest economic entities, employing a large number of workers and playing a strong role in public finances and supply chains (Kušljugić et al., 2023). Energy policy is largely shaped by political parties, with governments, through their representatives, exerting control over the sector in order to maintain energy sovereignty, social stability, and employment, often at the expense of efficiency and long-term sustainability. This approach leads to poor governance and unprofitable investments (Kušljugić et al., 2023).

Political actors in the Western Balkans still lack sufficient understanding of the importance of decarbonizing the energy sector. The closure of coal mines would have significant economic and social consequences, including the loss of a large number of jobs and a decline in revenues for local communities. Nearly 70% of electricity in the region is still produced from coal, except in Albania, where more than 99% comes from hydropower (Balkan Green Energy News, 2023). According to Kušljugić et al. (2023), in 2022, the Western Balkans generated 69.5 TWh of electricity, of which 63% came from coal-fired power plants (see Graph 1). The countries with the highest share of coal in their energy mix were Kosovo (92%)*, North Macedonia (72%), and Serbia (70%). At that time, there were 36 active coal power plants in the region, with a total capacity of 8,255 MW, employing approximately 46,000 workers directly and up to 100,000 indirectly, including coal mining operations. Hydropower accounted for 34% of electricity generation, while variable renewable energy sources (solar and wind) made up only 3.5% of total production. Although solar capacity has increased, its share in 2022 was just 0.44%, while wind power accounted for 3%. The installed capacity of renewable energy sources (RES) per capita is only 0.0645 kW, which is 15.5 times lower than in the EU, where the average is 1 kW per capita.

Figure 1 - Electricity Production and Consumption in the Western Balkans in 2022



Source: author's compilation based on Kušljugić et al. (2023)

With the signing of the Energy Community Treaty in 2005, the Western Balkan countries began the process of aligning with European energy standards, creating a common electricity and gas market with the EU. This was followed by the implementation of National Energy Efficiency Action Plans (NEEAPs) and National Renewable Energy Action Plans (NREAPs). The first two phases of the NEEAPs were implemented between 2010 and 2015, during which most countries achieved around 50% of their targets: Albania in the transport sector, Bosnia and Herzegovina in the residential sector, and Serbia and North Macedonia in industry (Filipović and Ignjatović, 2022). The third phase (2017-2020) included Serbia, Montenegro, and partially North Macedonia.

The Berlin Process initiative (launched in 2014 by Germany) further encouraged reforms, and in 2020, Western Balkan leaders committed to implementing the Green Agenda. However, progress has been limited, and fossil fuels have maintained a dominant share. According to Frey (2024), the reasons include chronically low investment, poor governance, and geopolitical obstacles. Nonetheless, awareness of renewable energy and alignment of legislation with EU standards is growing. Carbon pricing is becoming a key instrument for decarbonization, and the EU and the Energy Community have proposed a joint regional model, the Western Balkans Emissions Trading System (WB ETS), to establish a real market price for CO₂ emissions (Kušljugić et al., 2023). The first step toward this is the adoption of the Carbon Border Adjustment Mechanism (CBAM), which will act as a tariff on imports of electricity and carbon-intensive goods (such as steel, cement, fertilizers, aluminum, and hydrogen) and is set to take effect by 2026 (European Commission, 2023). During the transitional phase, the methodology for calculating emissions and adjusting prices is expected to be tested. The introduction of CBAM will have varying impacts on Western Balkan countries depending on their export-energy structure and the degree to which they have implemented climate measures.

Bosnia and Herzegovina

In Bosnia and Herzegovina (hereinafter: BH), thermal power plants account for approximately 60% of electricity production, hydropower plants for 36.7%, while wind and solar energy make up only 3.5%. The energy transition formally began in 2013 with the adoption of the Strategy for Climate Change Adaptation and Low-Carbon Development, but most of its goals have yet to be achieved. According to Kušljugić

and Miljević (2023), skepticism toward renewable energy sources prevails in BH, accompanied by the perception that the EU, through decarbonization, imposes dependency and protects its own interests. The energy sector still relies on low electricity prices, which are maintained thanks to export revenues. However, this price does not account for the costs of controlling local pollution (sulfur dioxide – SO₂ nitrogen oxides – NO_x, and particulate matter), which poses a threat to public health. The introduction of CBAM would result in an additional cost of €60/MWh, thereby reducing export profits and the ability to subsidize households and small businesses.

The technical and financial condition of thermal power plants and coal mines in BH is poor – plants are on average over 40 years old, operate at a loss, and have low reliability (e.g., Ugljevik TPP recorded 22 breakdowns in just eight months in 2022). BH has significant potential for renewable energy sources (wind, solar, hydropower, and biomass), which, combined with existing hydro capacity, could enable a full transition to 100% renewables (RES). According to Miljević and Ribić (2022), BH has access to various funding sources, including IPA funds, the Green Climate Fund (GCF), and support from international financial institutions such as the European Investment Bank, European Bank for Reconstruction and Development, and the World Bank. However, the transition has been delayed due to political unwillingness to confront complex challenges. Most activities originate from individual companies, while investments remain limited due to regulatory barriers, despite high interest from investors.

Serbia

Serbia produces the majority of its electricity from domestic sources, with around 70% relying on lignite, while hydropower accounts for the remainder. Despite growth, wind energy accounted for only 2.8% in 2021. Serbia's traditional energy ties with Russia further complicate sectoral diversification. Although the National Renewable Energy Action Plan was adopted in 2013, most of its measures have not been implemented. The new Integrated National Energy and Climate Plan (INECP) for 2030 (CEEenergynews, 2024) sets a target of 45% RES, which experts consider overly ambitious and politically motivated (Energetski portal, 2024a). Despite the entrenched belief that coal-based energy is cheaper, the actual costs are high. Thermal power plants in Serbia are the region's largest emitters of SO₂, releasing nearly 300,000 tons in 2023, with an increase compared to 2022 (Energetski portal, 2024b). The health consequences include 2,326 premature deaths, 666,939 lost workdays, and an estimated €5.16 billion in costs (Climate Action Network Europe, 2021). Nevertheless, the CBAM mechanism is unlikely to significantly affect Serbia, given its low electricity exports to the EU (Taylor, 2023).

Serbia has significant potential for electricity production from renewable energy sources, particularly biomass and hydropower. However, in order to increase the use of renewables, certain political decisions must be made and a legal framework with realistic targets established to enable an effective energy transition. In addition to EU IPA pre-accession funds, Serbia also has access to financing from UN programs for CO₂ emissions reduction, the European Bank for Reconstruction and Development (EBRD), the Western Balkans Investment Framework, and smaller funds for energy efficiency projects. Nevertheless, there is still a lack of large-scale projects in wind, solar, and hydropower. To change this, measures must be implemented to reduce investment risks in renewable energy sources. According to Radosavljević (2020), this includes simplifying procedures, expanding the grid, stable incentives through 2030, and facilitating corporate power purchase agreements (PPAs). A public campaign is also needed to reduce resistance to the transition, with estimates suggesting that lowering investment risk could cut RES financing costs in half.

Montenegro

Despite Montenegro's long tradition in utilizing renewable energy sources, their total share in electricity production stands at 53.98%. The energy transition is progressing slowly, as decarbonization is largely perceived as an external EU demand. According to Taylor (2023), electricity exports increased significantly following the commissioning of the undersea cable to Italy, and Montenegro now exports more than 50% of its total electricity production.

The guidelines for the transition are outlined in the Operational Programme for the Implementation of the Smart Specialization Strategy 2021–2024, while the Roadmap toward a Circular Economy was developed in 2022, in cooperation with the Chamber of Commerce of Montenegro and the United Nations Development Programme (UNDP). According to the Government of Montenegro (2021), the energy sector faces several obstacles, including a lack of integration between energy and innovation, limited access to key information for both citizens and businesses, no plan for the closure of the Pljevlja Thermal Power Plant, which operates illegally, nor a retraining plan for its workers. In addition, research projects are hindered by fragmentation and limited funding, due to a bottom-up approach.

In 2020, Montenegro introduced an emissions trading mechanism, with a minimum price of €24 per ton of CO₂ equivalent. The recipient of the funds is the Environmental Protection Fund, and the collected revenues must be directed toward renewable energy projects. According to UNDP (2022), Montenegro has several sources of funding available for the energy transition: state funds are provided through Elektroprivreda Crne Gore, individual funds, directorates, and specific banks. Additional funding is also provided by the EU through pre-accession funds, the French Development Agency (supporting sustainable and inclusive development projects in Montenegro), the Regional Circular Economy Initiative in Turkey and the Western Balkans, and the European Bank for Reconstruction and Development (EBRD).

Albania

Albania meets nearly 99% of its electricity needs from hydropower, making it one of the most energy-sustainable countries in the region (Balkan Green Energy News, 2023). However, such dependency also makes it vulnerable to climate change, particularly during dry periods when competition for water resources arises, especially with agriculture. According to the European Training Foundation (2022), Albania produces 5.8 TWh of electricity annually, covering 79% of domestic consumption, while the remainder is imported. Grid losses reach 26%, and CO₂ emissions per capita are low (1.94 tons). The country possesses coal, oil, and gas reserves, but they are underutilized.

The main challenges in the sector include diversifying energy sources, increasing efficiency, and grid management. Key infrastructure developments include the Trans-Adriatic Pipeline (TAP) and the planned construction of a 500 MWe gas-fired power plant (GTPP) near Korçë, which would reduce biomass usage and contribute to lowering pollution levels. In addition to hydropower, Albania has significant potential for the development of solar and wind energy, especially in mountainous areas. In recent years, market mechanisms have been introduced to support renewable energy sources, alongside the development of a regulatory framework and the establishment of a dedicated authority for implementing auction procedures.

North Macedonia

North Macedonia relies heavily on lignite, low-quality gas, and hydropower, but still imports a significant amount of electricity. In 2022, the country produced 5,634 GWh and imported an additional 1,471 GWh (CEE Bankwatch Network, 2023). The Energy Development Strategy 2020–2040 outlines three

scenarios, with the green scenario aiming for a complete coal phase-out by 2025, which would make North Macedonia the first country in the region with such a plan. The National Energy and Climate Plan (NECP) from 2022 follows this progressive direction and includes the planned closure of the Oslomej and Bitola thermal power plants. However, according to the CEE Bankwatch Network (2023), North Macedonia's energy sector faces several inconsistencies: the exploitation of the Živojno coal mine is set to extend the operation of Bitola TPP by more than a decade; the NECP includes a new fossil-fuel power plant, along with additional gas-fired plants that are not mentioned in strategic documents; gas imports depend on Bulgaria and are mainly used in industry and district heating; the renewable energy target for 2020 was reduced from 28% to 23%, with actual achievement at only 19.2%.

Since 2020, North Macedonia has commissioned the Bogdanci wind farm (36.8 MW), with support from the EU and the KfW Development Bank. The Bogoslovec wind farm (36 MW) began operation in 2023. Photovoltaic capacity reached 144 MW by the end of 2022, with continued growth expected. The strategy envisions an additional 998 MW of hydropower by 2040. Distribution losses amounted to 13.5% in 2022, while energy efficiency remains a low priority. Outdated heating systems continue to increase costs for households. In line with the Energy Community's targets, North Macedonia must raise the share of renewables (RES) to 38% and reduce GHG emissions by 82% compared to 1990 levels, requiring ambitious reforms and investment.

Kosovo*

The total installed capacity in Kosovo* amounts to 1,568 MW, of which 82% is based on lignite (Bankwatch Network, n.d.). In recent years, new renewable energy capacities have been introduced, particularly wind and hydropower, but the sector still faces numerous challenges. The facilities are outdated, frequent breakdowns occur, and the transport sector makes almost no use of renewables due to non-alignment with EU directives (2009/28/EC and 2018/2001). While energy intensity has decreased by 40% over the past decade, it still exceeds the regional average by 25%, and GHG emissions from the economy are more than twice the EU average. Given Kosovo's* modest electricity exports to the EU, CBAM is unlikely to have a significant impact.

Since 2020, the Albanian-Kosovar bloc (AK bloc) has operated as an independent regulatory body, and the establishment of the unified Albanian electricity exchange (ALPEX) has strengthened market integration (IFC, 2020). Within this framework, technological innovations such as green hydrogen, geothermal energy, and small modular reactors are also being explored. Kosovo* has a high level of regional energy interconnection – net import and export capacities amount to 1,316 MW and 1,175 MW, respectively, resulting in an interconnection rate of 78%, which exceeds the EU's 2030 targets. However, due to decades of underinvestment, the sector requires comprehensive transformation and substantial financial investment to improve efficiency, system reliability, and consumer protection, as well as to ensure greater energy security and resilience.

Research Findings

The analysis shows that the Western Balkan countries are at different stages of readiness for implementing the green transition. While they share a common dependence on coal and low diversification of the energy mix, there are significant differences in the progress achieved toward the green transition. The findings can be systematized through the four dimensions of the model: regulatory framework, institutional capacity, energy mix, and financial instruments. Based on these dimensions, an assessment of the readiness of the Western Balkan countries has been conducted and is presented in the following table.

Table 1 - Assessment of Western Balkan Countries' Readiness for the Green Transition by Key Indicators

Indicators	BH	Serbia	Montenegro	Albania	North Macedo-	Kosovo*
Regulatory Framework						
National Strategy for Climate Change / Green Transition	Strategy exists, but not fully implemented	Strategy adopted, NECP adopted in 2024 with projections to 2050, Climate Law adopted	Fragmented regulatory framework, NECP in development, guidelines provided through Operational Programme and Circular Economy Roadmap	Green Strategy 2023–2025 adopted, implementation of market support for RES underway through auction mechanisms	NECP and strategy adopted, political framework developed	Regulatory framework under development, lacking alignment with EU directives on biofuels
Alignment with the EU legal framework (NEEAP, NECP, directives)	Partial alignment, NECP developed but not operational	Medium to high level of alignment	Low level of alignment with EU directives	Alignment improving, NECP developed	High level of alignment with EU legislation	Very low level of alignment
Institutional Capacity						
Existence of a competent authority for the green transition (ministry/ agency)	Entity-level fragmentation, weak coordination at the national level	Centralized ministry in place, working group for environmental protection established	Exists, but coordination is insufficient	Functional agency in place, SBFN member, establishment of body for RES program implementation	Exists, co-operation with EBRD and GGF	Bodies exist, but responsibilities are unclear

Transparency and availability of data for planning and monitoring	Poor transparency and insufficient publicly available data	Partial availability, introduction of standardized reporting	Limited data availability	Improved data availability	Public reports and databases exist	No centralized data system exists
Energy Mix						
Share of RES in electricity production	~40% (predominantly hydro)	~30% (mainly hydro, wind 2.8%)	~54% (predominantly hydro)	~99% (hydro)	~20%	<10% (new wind and hydro capacities under development)
Share of coal in electricity production	~60%	~70%	~40%	~0%	~50%	~90%
RES capacity per capita (kW/capita)	Low	Low	Low	Medium	Low	Very low
Financial Instruments						
Existence of GSSS instruments	ESG bonds (Naša Banka, 2023, 2024)	Green bonds (Eurobond 2021, €1 billion)	No	No	Green bonds (2023)	No
Total number and value of issuances	2 issuances, totaling €5.73 million	1 issuance, €1,000 million	0	0	1 issuance, €10 million	0

Involvement of international organizations	High (grants and IFIs heavily involved)	High (strong IFI support, NBS is an NGFS member, UN programs for CO ₂ emission reduction, funds for energy efficiency projects)	Low capital mobilization, presence of IFIs, IPA funds, EBRD, French Development Agency, and regional initiatives	Access to funds (IPA III), SBFN membership	IFI support, active energy fund, RES project financing through the EU, KfW, and other partners	Low IFI involvement, mainly bilateral assistance
Existence of a national green bond framework	No	Framework, evaluation, SPO, and ESG rating in place	No	In preparation	In preparation	No

Source: authors' compilation

General findings indicate that the Western Balkan countries are at different levels of development when it comes to readiness for the green transition. While some countries, such as Serbia and North Macedonia, show relatively higher scores in regulatory frameworks and institutional capacities, others lag behind due to fragmented institutions and a lack of legislative alignment. The energy mix remains a major challenge in most countries, with a strong dependence on coal and a low share of renewable sources, while progress in financial instruments remains limited and still at an early stage of development.

In terms of alignment with the Green Agenda and the EU acquis, Serbia and North Macedonia have made the most visible progress. Serbia has adopted a Climate Change Law, developed an NECP, and created a framework for issuing green bonds, including ESG rating evaluation. North Macedonia, in addition to adopting its NECP, has developed a clear political framework to support the transition. Bosnia and Herzegovina, although it has a strategy in place, faces institutional fragmentation that limits its effective implementation. Kosovo* and Montenegro lag behind in legal harmonization, while Albania has shown progress through the adoption of a Green Mid-Term Strategy.

The institutional infrastructure shows a low level of coordination between relevant bodies and often limited technical and administrative capacities. Serbia and North Macedonia have established expert working groups and competent ministries with clearly defined responsibilities. In Bosnia and Herzegovina, responsibilities are dispersed across entity levels, making policy implementation more difficult. Albania and Montenegro have set up institutions, but lack sufficient capacity or inter-institutional coordination. Kosovo* lacks a clear institutional framework, and the absence of a centralized data system further limits planning. Access to relevant data and transparency are also underdeveloped in nearly all countries. Coal dependency remains a major obstacle to decarbonization, particularly in Serbia, BH, North Macedonia, and Kosovo*, where thermal power plants still dominate electricity production. Montenegro has a more balanced mix, though with no significant share of solar or wind energy. On the other hand, Albania stands out as a positive example, generating 99% of its electricity from hydropower. However, the share of solar and wind energy in the overall energy mix of the region

remains marginal – below 5%. The total renewable energy capacity per capita in the region is 15 times lower than the EU average.

Green and ESG bonds are still in the early stages of development. Serbia is the first and only non-EU country to issue a green Eurobond, amounting to €1 billion, while Bosnia and Herzegovina and North Macedonia have launched smaller ESG and green bond issuances. However, the presence of international financial institutions such as the EBRD, GGF, and IPA III provides significant potential for support. The lack of formal frameworks for green bonds in most countries remains a barrier to broader application of these instruments.

Conclusion

The green transition in the Western Balkans represents one of the most important challenges for the future economic, social, and political development of the region. The analysis conducted in this paper has shown that Western Balkan countries are entering the transition with pronounced structural weaknesses, stemming from a high dependence on fossil fuels, particularly coal, a low diversification of the energy mix, as well as institutional and financial constraints. The regulatory framework for implementing the green transition has been formally established in most countries through strategies and plans aligned with the goals of the European Green Deal and the Green Agenda for the Western Balkans. However, it is evident that legislative reforms are not always accompanied by consistent implementation, pointing to the need for stronger legal certainty, improved coordination between different levels of government, and more effective enforcement of existing regulations. Serbia and North Macedonia have made the most significant progress in normative alignment, while Bosnia and Herzegovina, Montenegro, and Albania lag behind, primarily due to institutional fragmentation and limited administrative capacity. Institutional capacities for implementing the green transition are generally insufficient and uneven. In most countries in the region, there is a low level of intersectoral cooperation, a lack of specialized expert bodies, and limited access to reliable data necessary for the design and monitoring of sustainable development policies. The absence of systemic support for innovation and underdeveloped mechanisms for civil society participation further slow down the transition process.

When it comes to the energy sector, coal dependency and the dominance of thermal power plants remain defining characteristics in all countries except Albania. The share of variable renewable energy sources in electricity generation is still low, averaging below 5%, while the installed renewable energy capacity per capita is fifteen times lower than in EU member states. A comparison with the EU clearly highlights vast differences in the level of decarbonization and energy modernization. Issues such as outdated infrastructure, high greenhouse gas emissions, and low energy efficiency further complicate the energy transition and threaten the environmental security of the region.

The financial aspect of the green transition reflects similar challenges. Although international financing mechanisms, such as the IPA III fund, the Western Balkans Investment Framework, and green financial instruments (GGF, REEP), are available, their utilization remains limited. The lack of a developed green bond market and the slow development of ESG standards further highlight the need to strengthen the financial sector's capacity and improve regulatory frameworks for sustainable finance. The emergence of mechanisms like CBAM adds complexity to the region's position, exposing countries to direct economic consequences for delayed decarbonization efforts. Export conditions to the EU are becoming increasingly stringent, and countries that fail to adapt to the new requirements risk losing competitiveness and market access. Despite these challenges, the green transition offers a unique develop-

ment opportunity for Western Balkan countries. Through energy source diversification, regulatory improvement, institutional capacity building, and more efficient use of available financial mechanisms, the region can become more attractive for investment, enhance citizens' quality of life, and achieve long-term sustainable economic growth. The future of the green transition in the Western Balkans will depend on the consistent implementation of reforms, the ability of institutions to develop innovative approaches to sustainability, and the readiness of societies to recognize the importance of this process for their economic, environmental, and social resilience.

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