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# **BOOK OF ABSTRACTS**

## **ZBORNİK SAŽETAKA RADOVA**

**IMPACT ASSESSMENT &  
EU TAXONOMY:  
FROM POLICY  
TO PRACTICE**

**OPATIJA, CROATIA  
October 8<sup>th</sup> - 10<sup>th</sup>, 2025**

**PROCJENA UTJECAJA I  
EU TAKSONOMIJA:  
OD POLITIKE  
DO PRAKSE**

**OPATIJA, HRVATSKA  
8. – 10. listopada 2025.**

**IMPACT ASSESSMENT AND EU TAXONOMY:  
FROM POLICY TO PRACTICE  
PROCJENA OKOLIŠA I EU TAKSONOMIJA:  
OD POLITIKE DO PRAKSE**

**PATRON / POKROVITELJ**

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## SECTION A - EU SUSTAINABILITY REGULATIONS

### SEKCIJA A - EU PROPISI O ODRŽIVOSTI

|                                                                                                                                                                                                               |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Afanasyeva Taisiya, Callen-Kovtunova Jessica: <i>Energy Sector: Strategic Environmental Assessment for Nuclear Power Programmes and the EU Taxonomy Requirements</i>                                          | 8  |
| Cepuš Sabina, Harmel Matjaž, Krajnc Aleksandra, Lapajne Pija, Škrjanec Samo: <i>Guidelines for the Application of the DNSH Principle in EU Cohesion Projects in Slovenia</i>                                  | 9  |
| Grgat Branimir: <i>Impact of EU Taxonomy implementation on LTV, DSCR, GAR, and CO<sub>2</sub> Emissions indicators, during the loan approval process</i>                                                      | 10 |
| Matešić Mirjana: <i>Omnibus I impacts on sustainability and competitiveness</i>                                                                                                                               | 12 |
| Meštrić Mirjana, Čačić Marina, Mihulja Andrijana, Keglević Sven, Grgurić Zoran: <i>Green Urban Renewal Strategies and their Contribution to EU Taxonomy Objectives</i>                                        | 13 |
| Somodi Ivančica, Srpak Melita, Mišić Tea, Čulina Rapo Marija: <i>Construction waste as a secondary raw material: directions for optimization in recycling processes and production of recycled aggregates</i> | 15 |
| Trstenjak Sebastijan, Radaković Monika, Hrgarek Marija: <i>Climate change and the DNSH principle: Integration into development projects</i>                                                                   | 19 |

---

## SECTION B - ENVIRONMENTAL IMPACT ASSESSMENTS

### SEKCIJA B - PROCJENA UTJECAJA NA OKOLIŠ

|                                                                                                                                                                                                                                                                                            |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Bilić Sunčana, Vresnik Fanica, Peternel Hrvoje, Žiljak Mirjana: <i>Project variations in EIA procedures</i>                                                                                                                                                                                | 24 |
| Celinščak Maja, Đaković Danijela, Mikulić Nenad, Mesarić Mario: <i>Social Impact Assessment in Croatia: Experts' Perspective on Current Practice, Key Constraints, and Future Directions</i>                                                                                               | 26 |
| Kolar Planinšić Vesna: <i>Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and the Protocol on Strategic Environmental Assessment (SEA Protocol): International Legal Instruments for the Sustainability of Programmes, Plans, and Projects</i> | 27 |
| Poleto Mario, Petrić Morana: <i>Assessment of O<sub>3</sub> formation through photochemical reactions of Volatile Organic Compounds with Nitrogen Oxides in the area of the crude oil and petroleum products storage facility</i>                                                          | 28 |
| Petean Flaviu: <i>Navigating EIA Limits: Social Impacts in Romania's Development Landscape</i>                                                                                                                                                                                             | 30 |
| Vojnović Ana, Strmšnik Klemen, Cepuš Sabina, Lapajne Pija, Harmel Matjaž: <i>Developing a Green System and Green Standards in the Municipality of Kranj through Stakeholder Engagement</i>                                                                                                 | 31 |

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SECTION C - NATURE CONSERVATION – APPROPRIATE  
ASSESSMENT - HABITAT RESTAURATION  
**SEKCIJA C - ZAŠTITA PRIRODE – ODGOVARAJUĆA PROCJENA –  
OBNOVA STANIŠTA**

|                                                                                                                                                                                                                                                                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Čutura Marko: <i>Challenges in Assessing Impacts on Geodiversity in the Republic of Croatia</i>                                                                                                                                                                                                                                                     | 33 |
| Kolar Planinšić Vesna: <i>Effectiveness of Overriding Public Interest in the Case of the Hydropower Plant Project Mokrice</i>                                                                                                                                                                                                                       | 35 |
| Kolar Planinšić Vesna, Juran Vesna, Kaligarič Simona: <i>Time efficiency in Appropriate assessment considering DSH principle in the case of spatial plan for Ptuj – Markovci motor way in Slovenia</i>                                                                                                                                              | 36 |
| Peternel Hrvoje, Maslač Mikulec Maja, Patčev Elena: <i>Critical Habitat Assessments: Benefits, Challenges and Examples</i>                                                                                                                                                                                                                          | 37 |
| Rodić Petra, Kirin Tamara, Franković Matija, Gambiroža Patricija, Hamidović Daniela, Hlavati Dina, Jelić Katja, Katusić Luka, Marić Martina, Mihinjač Tanja, Pavlinić Maja, Posavec Vukelić Vida, Sučić Ivana, Vitas Boria, Zadravec Mladen: <i>Pregled Izvješća o stanju očuvanosti vrsta i stanišnih tipova u Hrvatskoj za period 2019.-2024.</i> | 38 |
| Zec Mate: <i>A deep dive into species sensitivity mapping in Croatia</i>                                                                                                                                                                                                                                                                            | 39 |

**SECTION A / SEKCIJA A**

**EU SUSTAINABILITY REGULATIONS  
EU PROPISI O ODRŽIVOSTI**

## **Energy Sector: Strategic Environmental Assessment for Nuclear Power Programmes and the EU Taxonomy Requirements**

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### **Abstract**

The Strategic Environmental Assessment (SEA) is a framework applied during the preparation of policies, plans and programmes. The main objective is to avoid or mitigate any expected significant negative environmental impacts arising from these policies, plans and programmes, and to enhance their positive environmental outcomes. The SEA guidelines of the International Atomic Energy Agency assist governments in integrating environmental considerations into the strategic decisions of nuclear power programmes, thus promoting sustainable development.

As part of the planned update of these guidelines, developing sustainability frameworks, notably the EU Taxonomy and ESG reporting requirements, are under consideration for inclusion in the updated version of the guidelines. This update aims to align the SEA process with SDGs and sustainable finance instruments.

Improving the compatibility of EU Taxonomy and Environmental Impact Assessment systems, including SEA, is needed to ensure a consistent and integrated approach. This is particularly relevant given the inclusion of nuclear energy in the EU Taxonomy under specific environmental conditions. The updated SEA guidelines will enhance the transparency, sustainability and financial credibility of nuclear power programmes, supporting countries in meeting both energy and environmental objectives.

**Keywords:** SEA, EU Taxonomy, Sustainable Financing, Nuclear Power Programmes, ESG

## Guidelines for the Application of the DNSH Principle in EU Cohesion Projects in Slovenia

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### Abstract

The integration of the “Do No Significant Harm” (DNSH) principle into the 2021–2027 EU Cohesion Policy Programme is a new requirement that presents significant challenges in practice. To support applicants and authorities, Slovenia has developed national guidelines for evaluating compliance with the DNSH principle. These guidelines provide methodological instructions for both simplified and substantive assessments of environmental impacts across six key environmental objectives, in line with Article 17 of the EU Taxonomy Regulation. The presentation introduces the structure and content of the guidelines, including cross-sectoral and sector-specific criteria, technical screening measures, and required documentation. It also highlights preliminary experiences from ongoing project evaluations, which reveal common issues—such as inadequate integration of climate risk assessments or misunderstanding of the difference between legal compliance and DNSH requirements. These insights demonstrate the importance of practical tools and clear guidance to ensure environmentally sustainable investments under EU cohesion funding.

**Keywords:** DNSH, cohesion policy, EU taxonomy, environmental safeguards, Slovenia

## **Impact of EU Taxonomy implementation on LTV, DSCR, GAR, and CO<sub>2</sub> Emissions indicators, during the loan approval process**

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### **Abstract**

Some of the traditional metrics commonly used by financial institutions in the investment loan approval process include LTV – Loan to Value and DSCR – Debt Service Cover Ratio. Following the adoption of the strategic European Green Deal (2019), a series of related regulatory frameworks were introduced: the EU Taxonomy Regulation (2020), the Delegated Acts specifying technical screening criteria (2021, 2023, 2024), the Corporate Sustainability Reporting Directive (CSRD, 2022), and the European Sustainability Reporting Standards (ESRS, 2023). Independently of the Omnibus and any subsequent amendments, based on these sustainability-related documents, financial institutions are also able to calculate additional metrics, such as the Green Asset Ratio (GAR) and financed CO<sub>2</sub> emissions. This paper presents a case study of the construction of a commercial building designed in compliance with the EU Taxonomy and its associated environmental objectives (Do No Significant Harm and Significant Contribution). For the same building, used as collateral, the study illustrates how embedding the EU Taxonomy requirements can improve core banking indicators, including LTV, DSCR, GAR, and financed CO<sub>2</sub> emissions.

**Keywords:** EU Taxonomy, Bank, Environmental Sustainability, Collateral

## **Utjecaj primjene EU Taksonomije na pokazatelje LTV, DSCR, GAR i emisije CO<sub>2</sub>, tijekom procesa odobravanja kredita**

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### **Sažetak**

Neki od tradicionalnih pokazatelja koji se primjenjuju prilikom procesa odobravanja investicijskih kredita od strane financijskih institucija su: LTV-Loan to Value i DSCR-Debt Service Cover Ratio. Usvajanjem strategijskog dokumenta Europskog zelenog plana (2019.) posljedično su donešeni : Uredba o Taksonomiji (2020.), delegirani akti Taksonomije za tehničke kriterije provjere (2021.,2023.,2024.), CSRD-direktiva o korporativnom izvještavanju o održivosti (2022.) i ESRS-Europski standardi izvještavanja o održivosti (2023.). Neovisno o Omnibusu I mogućim izmjenama, na temelju dokumenata vezanih uz održivost, financijske institucije su u mogućnosti računati I dodatne pokazatelje kao što su: GAR-Green asset ratio i financirane emisije CO<sub>2</sub>. U samom radu se predstavlja primjer izgradnje poslovne zgrade, usklađene s odredbama EU Taksonomije I povezanih okolišnih ciljeva (nečinjenje značajne štete i značajni doprinos). Za istu zgradu kao kolateral, računaju se pokazatelji kako ugrađena EU Taksonomija I njene odredbe, poboljšavaju osnovne bankarske pokazatelje LTV, DSCR, GAR i financirane emisije CO<sub>2</sub>.

**Ključne riječi:** EU Taksonomija, Banka, Okolišna održivost, Kolateral

## Omnibus I impacts on sustainability and competitiveness

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### Abstract

For the sustainability practitioners and experts, the buzz word of the year 2025 is the word Omnibus. After several years of the development of very ambitious sustainability regulation, which started with European Green Deal (EGD), at the beginning of this year and with the start of the new European Commission mandate, things have started to dissolve. With Omnibus I, published of February 26, 2025, the businesses in the EU are now facing significant changes in regulation developed under the sustainability financing package. It is not clear where this attack on environmental and human rights protection will end.

This paper explores the so far measured impacts that the sustainability regulation (namely CSRD with ESRS and EU Taxonomy) had on the reporting practices and performance of businesses that are using it. It explores how the changes introduced under Omnibus I will intervene with the practices that are already in place. The paper aims, to anticipate the Omnibus repercussions, its pros and cons as well as the opinions of various stakeholder groups, including businesses, about the sustainability regulation passed and the changes introduced by Omnibus. The paper finally offers evaluation of the Omnibus package and its possible impacts on the future of sustainability.

**Keywords:** Omnibus, sustainability reporting, CSRD, CSDDD, ESG

## Green Urban Renewal Strategies and their Contribution to EU Taxonomy Objectives

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### Abstract

The EU Taxonomy functions as a dynamic classification tool that ensures sustainable investments by setting measurable climate and environmental objectives, including the conservation and restoration of natural ecosystems and biodiversity.

At the local level, Green Urban Renewal Strategies should play a key role in translating these objectives into practice, linking spatial planning, nature protection, and financial decisions, thus enabling cities to integrate the principles of biodiversity preservation, green infrastructure, and climate change adaptation into development policies, thereby also contributing to the objectives of the EU Taxonomy.

However, limited budgets for the development of these strategies often impose compromises in the scope of spatial and environmental analyses, public opinion research, development of impact indicators, and cost assessments, thus reducing their potential for sustainable spatial management. Raising standards and systematically integrating the EU Taxonomy principles can enable cities to achieve more effective and long-lasting results in nature conservation and urban ecosystems restoration.

**Keywords:** EU taxonomy, green urban renewal, limited budget, biodiversity, green infrastructure

## **Uloga strategija zelene urbane obnove u postizanju ciljeva EU taksonomije**

Meštric Mirjana, Čačić Marina, Mihulja Andrijana,  
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### **Sažetak**

EU taksonomija djeluje kao dinamičan klasifikacijski alat koji osigurava održiva ulaganja postavljanjem mjerljivih klimatskih i okolišnih ciljeva, uključujući očuvanje i obnavljanje prirodnih ekosustava i bioraznolikosti.

Na lokalnoj razini, strategije zelene urbane obnove trebale bi imati ključnu ulogu u prevođenju tih ciljeva u praksu, povezujući prostorno planiranje, zaštitu prirodnih vrijednosti i financijske odluke, omogućujući gradovima da integriraju načela očuvanja bioraznolikosti, zelene infrastrukture i prilagodbe klimatskim promjenama u razvojne politike, čime doprinose i ciljevima EU taksonomije.

Međutim, ograničeni proračuni za izradu tih strategija često nameću kompromise u opsegu prostornih i okolišnih analiza, istraživanju javnog mišljenja, razradi pokazatelja učinaka i procjenama troškova, čime se smanjuje njihov potencijal u održivom upravljanju prostorom. Podizanje standarda i sustavna integracija načela EU taksonomije može omogućiti gradovima da postignu dugoročnije i učinkovitije rezultate u očuvanju prirode i obnavljanju urbanih ekosustava.

**Ključne riječi:** EU taksonomija, zelena urbana obnova, ograničen proračun, bioraznolikost, zelena infrastruktura

## **Construction waste as a secondary raw material: directions for optimization in recycling processes and production of recycled aggregates**

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### **Abstract**

In the context of rapid urbanization in the Republic of Croatia and the European Union, construction waste management has become an increasingly significant challenge due to the growing volumes of generated waste and its potential for valorization through recovery and recycling. This paper presents an analysis of the current construction waste management system in Croatia and the EU, with a special focus on the relevant legal framework, waste classification based on properties (inert, hazardous), and quantitative data on the production, collection, and recovery of construction waste during 2022. The processes of mechanical treatment of construction waste, including crushing and screening, are examined in detail, along with the characterization of recycled aggregates as secondary raw materials, emphasizing their physico-chemical properties and limit values of eluates. Particular attention is given to the end-of-waste criteria procedure, which enables the placement of recycled aggregates on the market as commercially acceptable construction products. The application of sustainable management principles within the framework of the circular economy represents both a challenge and an opportunity for reducing pressure on natural resources, creating new jobs, and promoting sustainable economic growth. The conclusions highlight the need for further educational and promotional activities aimed at raising awareness in the construction sector regarding the procedures for the cessation of waste status, as well as the importance of involving local communities in waste management systems to ensure an integrated environmental and social response. Furthermore, the connection with the EU Taxonomy Regulation is emphasized, where the transition to a circular economy is recognized as one of the key environmental objectives. The ESG report recognizes the reuse of

recycled materials as an opportunity to reduce the environmental impact of business. The implementation of modern technologies and appropriate legal frameworks is essential for establishing a sustainable and competitive market for recycled construction materials, in line with European and national environmental policies.

**Keywords:** construction waste, recycling, end-of-waste criteria, circular economy, EU taxonomy

## **Građevinski otpad kao sirovina: pravci optimizacije u postupcima recikliranja i dobivanja recikliranih agregata**

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### **Sažetak**

U uvjetima intenzivne urbanizacije u Republici Hrvatskoj i Europskoj uniji, gospodarenje građevinskim otpadom postaje sve značajniji izazov, s obzirom na rastuće količine nastalog otpada i njegov potencijal za valorizaciju kroz uporabu i recikliranje. Ovaj rad prikazuje analizu postojećeg sustava gospodarenja građevinskim otpadom u Republici Hrvatskoj i EU, s posebnim naglaskom na relevantnu zakonsku regulativu, klasifikaciju otpada prema svojstvima (inertni, opasni) te prikaz kvantitativnih podataka o proizvodnji, sakupljanju i uporabi građevinskog otpada tijekom 2022. godine. Detaljno su razmotreni procesi mehaničke obrade građevinskog otpada, uključujući drobljenje i prosijavanje, te je provedena karakterizacija recikliranih agregata kao sekundarnih sirovina s naglaskom na njihova fizikalno-kemijska svojstva i granične vrijednosti eluata. Posebna pozornost posvećena je postupku ukidanja statusa otpada (tzv. *end-of-waste* kriteriji) koji omogućuju stavljanje recikliranih agregata u funkciju tržišno prihvatljivih građevinskih proizvoda. Primjena načela održivog gospodarenja u kontekstu kružnog gospodarstva predstavlja istovremeno i izazov i mogućnost za smanjenje pritiska na prirodne resurse, stvaranje novih radnih mjesta te poticanje održivog gospodarskog razvoja. Zaključci rada ističu potrebu za dodatnim edukacijskim i promotivnim aktivnostima usmjerenim na podizanje svijesti u građevinskom sektoru o procedurama vezanim uz ukidanje statusa otpada, kao i važnost uključivanja lokalnih zajednica u sustave upravljanja otpadom radi osiguravanja integriranog ekološkog i društvenog odgovora. Istovremeno se naglašava povezanost s EU taksonomijom, unutar koje je prijelaz ka kružnom gospodarstvu prepoznat kao jedan od ključnih okolišnih ciljeva. ESG izvješće prepoznaje ponovno korištenje recikliranih materijala kao priliku za smanjenje utjecaja na okoliš u poslovanju. Implementacija suvremenih

tehnologija i odgovarajućih pravnih okvira ključna je za uspostavu održivog i konkurentnog tržišta recikliranih građevinskih materijala, djelujući u skladu s europskim i nacionalnim politikama zaštite okoliša.

**Ključne riječi:** građevinski otpad, recikliranje, *end-of-waste* kriteriji, kružnog gospodarstvo, EU taksonomija

## Climate change and the DNSH principle: Integration into development projects

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### Abstract

Climate change is one of the biggest challenges facing the world today. The Intergovernmental Panel on Climate Change (IPCC) defines climate change as any change in climate over time, whether due to natural changes or changes resulting from human activities. Climate change affects the frequency and intensity of extreme weather events (extreme precipitation, floods, torrents, storms, fires, etc.) and gradual climate change (increased air, soil and water surface temperatures, rising sea levels, etc.). The above factors affect all aspects of the environment and economy and threaten the sustainable development of society. Infrastructure plays an important role in the functioning of society and the economy, which has recently been particularly exposed to the effects of climate change; therefore, it is necessary to take future climate change projections into account at the initial stage of project and to be guided by the principle of no significant harm (DNSH) when implementing a project.

The principle of no significant harm is one of the key principles of the European Union within the Green Deal and the Recovery and Resilience Mechanism (RRF), and aims to ensure that no investment or project causes significant harm to the environment, as demonstrated through 6 environmental objectives: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy including waste prevention and recycling, prevention and control of air, water or land pollution, and protection and restoration of biodiversity and ecosystems. In practice, compliance with the DNSH principle is an essential element when applying for projects for EU funds. The acceptability of projects is assessed on the basis of their characteristics, which must not cause harm to any of the 6 environmental objectives listed above. In this context, the solutions that are planned to be implemented as part of a specific project, and which relate to the use of renewable energy sources, measures to reduce the consumption of water, electricity, natural gas, the energy properties of the infrastructure, the treatment of waste generated during the construction

and use of the project, the percentage of green areas at the location in question, etc., come to the fore. The benefits that the implementation of the project creates for the local community of the area where the project will be implemented are also taken into account.

The aim of this work is to present ways of evaluating the exposure of projects to climate change, i.e. primary and secondary climate factors and present concrete solutions that contribute to the adaptation of the project to climate change and the alignment of the project with the principle of non-significant harm (DNSH).

**Keywords:** climate change, DNSH principle, 6 environmental goals, project, adaptation

## Klimatske promjene i DNSH načelo: Integracija u razvojne projekte

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### Sažetak

Klimatske promjene u današnjici su jedan od najvećih izazova s kojima se cijeli svijet suočava. Međuvladin panel za klimatske promjene (IPCC) definira klimatsku promjenu kao svaku promjenu u klimi tijekom vremena bilo zbog prirodnih promjena ili promjena koje su rezultat ljudskih aktivnosti. Klimatske promjene utječu na učestalost i intenzitet ekstremnih vremenskih nepogoda (ekstremne padaline, poplave, bujice, oluje, požari i dr.) te na postepene klimatske promjene (porast temperature zraka, tla i vodenih površina, podizanje razine mora i dr.). Navedeni čimbenici utječu na sve aspekte okoliša i gospodarstva te ugrožava održivi razvoj društva. Bitnu ulogu u funkcioniranju društva i gospodarstva ima infrastruktura koja je u posljednje vrijeme posebno izložena učincima klimatskih promjena stoga je već u početnoj fazi potrebno u obzir uzeti buduće projekcije klimatskih promjena te se prilikom provedbe projekta voditi načelom nenanošenja bitne štete (DNSH).

Načelo nenanošenja bitne štete predstavlja jedno od ključnih načela Europske unije u okviru Zelenog plana i Mehanizma za oporavak i otpornost (RRF), a ima za cilj osigurati da niti jedna investicija odnosno projekt ne nanosi bitnu štetu okolišu što se dokazuje kroz 6 okolišnih ciljeva: ublažavanje klimatskih promjena, prilagodba klimatskim promjenama, održiva uporaba i zaštita vodnih i morskih resursa, prijelaz na kružno gospodarstvo uključujući sprječavanje nastanka otpada i recikliranje, sprječavanje i kontrola onečišćenja zraka, vode ili zemlje te zaštita i obnova bioraznolikosti i ekosustava. U praksi je usklađenje projekta s DNSH principom neizostavna stavka prilikom prijave projekata na EU fondove. Prihvatljivost projekata ocijenjena je temeljem njegovih karakteristika koje moraju biti takve da ne nanose štetu na niti jedan od ranije navedenih 6 okolišnih ciljeva. U tom kontekstu konkretno dolaze do izražaja rješenja koja se planiraju implementirati u sklopu određenog projekta, a koja se odnose na upotrebu obnovljivih izvora energije, mjere smanjenja potrošnje vode, električne energije, prirodnog plina, energetska svojstva infrastrukture, postupanje s otpadom nastalim prilikom gradnje

i korištenja projekta, udio zelenih površina na predmetnoj lokaciji i sl. U obzir se uzimaju i benefiti koje provedba projekta stvara na lokalnu zajednicu područja u kojem će se projekt provoditi.

Cilj rada je predstaviti načine ocjenjivanja izloženosti projekata na klimatske promjene tj. primarne i sekundarne klimatske faktore i predstaviti konkretna rješenja kojima se doprinosi prilagodbi projekta na klimatske promjene i usklađenju projekta s načelom nenanošenja bitne štete (DNSH).

**Ključne riječi:** klimatske promjene, DNSH načelo, 6 okolišnih ciljeva, projekt, prilagodba

**SECTION B / SEKCIJA B**

**ENVIRONMENTAL IMPACT ASSESSMENTS  
PROCJENA UTJECAJA NA OKOLIŠ**

## Project variations in EIA procedures

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### Abstract

In the Environmental Impact Assessment procedure, it is mandatory to consider alternative project variants and explain the reasons for selecting a particular variant. Project variations in this context entails examining alternative technical, spatial, and/or technological solutions for the planned project.

The aim of this analysis is to provide an overview of the criteria which have contributed to defining the final project variant, based on the previous EIA procedures in which the author has participated. By analyzing practical examples, several different criteria were identified, ranging from the fields of environmental and nature protection to constraints imposed by spatial planning and legislation. Some of these criteria were recognized and applied in the early stages of project development, prior to the initiation of the EIA procedure, while others were introduced in later stages during the procedure itself.

The conclusion is that final project variant may be defined in various ways – ranging from cases where proposed variants depend on investors and study developers, to those in which selected variants are the result of requirements imposed by competent authorities involved in the EIA procedure or by changes arising from the lengthy nature of the procedure. In the latter cases, investors must be prepared for the risk that, by the end of the EIA procedure, the project may be significantly modified compared to the variant they initially intended to develop.

**Keywords:** EIA procedure, alternative project variants

## Varijantiranje zahvata u PUO postupcima

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### Sažetak

U postupku procjene utjecaja zahvata na okoliš (PUO), obavezno je razmatranje varijantnih rješenja zahvata, uz obrazloženje razloga odabira određene varijante. Varijantiranje pritom podrazumijeva razmatranje alternativnih tehničkih, prostornih i/ili tehnoloških rješenja za planirani zahvat.

Cilj ove analize je dati pregled kriterija koji su, kroz dosadašnje postupke PUO u kojima je ovlaštenik sudjelovao, imali utjecaj na definiranje konačnih varijanti zahvata. Analizom primjera iz prakse, utvrđen je niz različitih kriterija, ne samo iz stručnih područja zaštite okoliša i prirode, već i prostorno-planskih ograničenja te zakonodavnih okvira. Utvrđeno je da su pojedini od kriterija prepoznati i primijenjeni već u ranim fazama razvoja zahvata, prije pokretanja postupka PUO, dok su neki primijenjeni u kasnijim fazama tijekom provedbe samog postupka.

Zaključeno je da konačne varijante zahvata mogu biti definirane na razne načine – uključujući slučajeve u kojima predložene varijante ovise o investitorima i izrađivačima studija, kao i one u kojima su odabrane varijante produkt zahtjeva nadležnih tijela uključenih u postupak PUO ili promjena nastalih zbog dugotrajnosti postupaka. U potonjim slučajevima investitori moraju biti spremni na rizik da zahvat na kraju postupka PUO u znatnoj mjeri može biti izmijenjen u odnosu na varijantu koju su inicijalno planirali razvijati.

**Ključne riječi:** postupak procjene utjecaja zahvata na okoliš, varijantna rješenja zahvata

## **Social Impact Assessment in Croatia: Experts' Perspective on Current Practice, Key Constraints, and Future Directions**

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### **Abstract**

The integration of Social Impact Assessments (SIAs) into investment projects and Environmental Impact Assessments (EIAs) is key to sustainable development. This is especially relevant in Croatia, where aligning national regulations with international standards is vital for sustainable growth and attracting responsible investment. As a first step to improving the depth and scope to which social aspects are integrated into project assessments in Croatia, the present study explores how practitioners perceive social aspects within their EIAs.

Expert consensus suggests that the social impact segment of a typical EIA lacks depth, focusing primarily on socioeconomic baseline analysis with prevailing metrics being demographics, cultural heritage, and land use. Despite these limitations, many experts note a slight positive trend in recent years toward greater inclusion of social aspects due to increased awareness regarding environmental and social issues and regulatory changes. The primary constraints on SIA are the lack of specific and clear legal regulation, poor data availability and quality, and a shortage of experienced specialists. Conversely, the strongest drivers for integrating social aspects are external stakeholder pressure and alignment with international standards.

Based on this survey insights, better integration of social impacts in Croatian EIAs requires focus on advancing national legislation, building expert capacity, and encouraging proactive, continuous stakeholder engagement.

**Keywords:** Social Impact Assessment, Environmental Impact Assessment, constraints, Croatia

## **Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and the Protocol on Strategic Environmental Assessment (SEA Protocol): International Legal Instruments for the Sustainability of Programmes, Plans, and Projects**

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### **Abstract**

This article analyses two international legal instruments that play a pivotal role in promoting environmental sustainability: the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and the Protocol on Strategic Environmental Assessment (SEA Protocol). These instruments remain the only international environmental binding frameworks that directly regulate the sustainability of programmes, plans, and projects while providing precise procedural rules for international cooperation between Parties. Their core purpose is to reduce adverse environmental effects by evaluating alternatives, integrating mitigation measures, and ensuring post-project monitoring. Since the Espoo Convention entered into force in 1997 and the SEA Protocol in 2010, international cooperation on environmental assessment has considerably expanded. This development has been supported through regional initiatives in the Baltic, Mediterranean, and South-Eastern Europe, as well as thematic guidance on public participation, health, and nuclear-related issues. At the same time, the conventions have fostered active networks of knowledge exchange among national focal points. Nonetheless, challenges persist in harmonizing national legislation, strengthening transboundary practice, building trust among Parties, and improving overall effectiveness. The Implementation Committee addresses these challenges by examining compliance cases and providing findings and recommendations, thereby ensuring the proper and progressive implementation of these instruments.

**Keywords:** Espoo Convention; SEA Protocol; transboundary environmental assessment; sustainability; international cooperation,

## **Assessment of O<sub>3</sub> formation through photochemical reactions of Volatile Organic Compounds with Nitrogen Oxides in the area of the crude oil and petroleum products storage facility**

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### **Abstract**

As a part of the Environmental Impact Study for the construction of a storage facility for crude oil and petroleum products, an ozone (O<sub>3</sub>) formation calculation was conducted to quantify the potential impact on air quality and human health. Ozone is formed in the troposphere through complex reactions involving volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>), influenced by meteorological conditions. NO<sub>x</sub>, which primarily enters the atmosphere through human activities, is a key factor in ozone formation and is present in almost all populated areas. Crude oil and petroleum products can contain significant amounts of VOCs, and their storage in tanks results in fugitive emissions into the atmosphere. Since the initial concentrations of VOCs and NO<sub>x</sub> are not directly proportional to the maximum ozone concentration, empirical measurements conducted in the mid-20th century determined the limit concentrations of ozone formed from initial VOC and NO<sub>x</sub> mixtures. Based on empirical values, a calculation of potential ozone concentrations was carried out at the oil storage site, and, in line with the obtained results, air protection measures were proposed within the Environmental Impact Assessment (EIA) procedure.

**Keywords:** Ozone, VOCs, storage area, air quality, EIA

## **Procjena formacije O<sub>3</sub> fotokemijskim reakcijama hlapivih organskih spojeva s dušikovim oksidima na području spremničkog prostora za naftu i naftne derivate**

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### **Sažetak**

Prilikom izrade Studije o utjecaju na okoliš za zahvat izgradnje spremničkog prostora nafte i naftnih derivata proveden je proračun formacije ozona (O<sub>3</sub>) radi kvantifikacije mogućeg utjecaja na kvalitetu zraka i zdravlje ljudi. Ozon nastaje u troposferi složenim reakcijama hlapivih organskih spojeva (HOS) i dušikovih oksida (NO<sub>x</sub>) uz posredovanje meteoroloških uvjeta. NO<sub>x</sub>, koji u atmosferu u najvećoj mjeri dopijeva ljudskim aktivnostima, predstavlja ključni čimbenik u procesu stvaranja ozona i prisutan je u gotovo svim naseljenim područjima. Nafta i naftni derivati mogu sadržavati značajne količine HOS-eva, a njihovo skladištenje u spremnicima uzrokuje njihove fugalne emisije u atmosferu. Budući da početne koncentracije HOS-eva i NO<sub>x</sub>-a nisu izravno proporcionalne maksimalnoj koncentraciji ozona, sredinom 20. stoljeća provedena su empirijska mjerenja koja su odredila granične koncentracije ozona nastale iz početnih smjesa HOS-a i NO<sub>x</sub>-a. Na temelju empirijskih vrijednosti izrađen je proračun mogućih koncentracija ozona na lokaciji spremničkog prostora, a u skladu s dobivenim rezultatima predložene su mjere zaštite zraka u okviru postupka procjene utjecaja zahvata na okoliš.

**Ključne riječi:** Ozon, HOS, spremnički prostor, kvaliteta zraka, procjena utjecaja na okoliš

## Navigating EIA Limits: Social Impacts in Romania's Development Landscape

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### Abstract

Romania's EIA system provides a solid structure for evaluating environmental impacts, but integration of social aspects is limited. While the legal framework covers direct, indirect, cumulative, and transboundary impacts, guidance on social issues is mostly restricted to population and human health data, with little detail on livelihoods, resettlement, vulnerability, or community well-being. EIA reports often use checklists and general statistics, with minimal field research or stakeholder consultation. Social concerns are frequently overlooked, especially in the transport sector, with limited involvement of social experts and weak links between land acquisition and broader social effects. Stakeholder engagement mechanisms often rely on limited channels to reach affected people, resulting in indirect communication that may not effectively connect with those most impacted.

Implementation occurs within a complex environment characterized by fragmented legislation and overlapping institutional responsibilities. Risks associated with facilities and supply chains are often addressed separately, which can complicate coordination. Limited capacity and resources, together with guidelines that may lack clarity, can result in less robust documentation and contribute to project delays. Public participation is frequently procedural, meaning that vulnerable groups may not be adequately represented. Additionally, monitoring and grievance mechanisms are still evolving, which can restrict opportunities for meaningful feedback and accountability.

**Keywords:** Environmental Impact Assessment (EIA) Social Impacts, Stakeholder Engagement, Institutional Capacity, Vulnerability

## **Developing a Green System and Green Standards in the Municipality of Kranj through Stakeholder Engagement**

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### **Abstract**

The Municipality of Kranj, Slovenia, is developing a comprehensive green system and green standards through a participatory, data-driven process. Spatial analysis identified over 15,000 ha of green areas and 17,000+ point and linear green elements, categorized into 14 typologies. To support strategic urban planning, a clearer definition of the municipal urban area was proposed. Green standards were developed in four key areas: (1) open and green space factors (e.g. defining minimum green coverage in residential and functional areas, regulating underground construction, and supporting urban cooling and livability), (2) urban biodiversity (Enhancing habitat quality and connectivity by using CBS+ scoring tool), (3) stormwater management (local retention, infiltration, and reuse) and (4) green mobility (priority for pedestrians, cyclists, public transport).

The standards were refined through stakeholder workshops and were tested on selected detailed municipal spatial plans in different planning phases. A structured evaluation tool was used to assess applicability, conflicts, and implementation needs. Feedback confirmed their usefulness and led to adjustments of standards in way they can be used in multiple cases.

This project demonstrates how cities can integrate green infrastructure into planning through co-creation, practical testing, and adaptive design - supporting climate resilience and quality of life.

**Keywords:** green standards, green system, urban planning, multi-stakeholder process, sustainable urban development

**SECTION C / SEKCIJA C**

**NATURE CONSERVATION – APPROPRIATE ASSESSMENT -  
HABITAT RESTAURATION  
ZAŠTITA PRIRODE – ODGOVARAJUĆA PROCJENA –  
OBNOVA STANIŠTA**

## Challenges in Assessing Impacts on Geodiversity in the Republic of Croatia

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### Abstract

The focus of this paper is the analysis of geodiversity as a key element of natural diversity and the challenges associated with its protection in Croatia, with particular emphasis on environmental impact assessments (EIA). Geodiversity, encompassing the geological, geomorphological, and pedological diversity of the lithosphere and pedosphere with spatially and temporally interconnected cause-and-effect relationships, is an integral component of the natural diversity of ecosystems and the ecosphere, yet it is often subordinated to biodiversity in nature conservation and frequently reduced to geological processes. Key documents for its protection and sustainable use are the Nature Protection Act and the Strategy and Action Plan for the Protection of Biological and Landscape Diversity of Croatia. Geodiversity protection in Croatia faces numerous challenges, particularly in environmental impact assessments (EIA). Major issues include the lack of specific legal regulations, limited institutional and professional expertise, absence of a unified geodiversity valuation methodology, incomplete and insufficient data registries, low public awareness of geodiversity's importance, and pressures on geodiversity. Overcoming these requires establishing clear EIA guidelines for geodiversity, investing in expert training, developing a national geodata database, and raising awareness of geodiversity's value. Integrating geodiversity into spatial planning and sustainable development is crucial for preserving Croatia's geoheritage.

**Keywords:** geodiversity, geoheritage, environmental impact assessment

## Izazov u procjeni utjecaja na georaznolikost u Republici Hrvatskoj

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### Sažetak

Tema ovog rada je analiza georaznolikosti kao ključnog elementa prirodne raznolikosti i izazova njezine zaštite u Hrvatskoj, s posebnim naglaskom na procjenu utjecaja na okoliš (PUO). Georaznolikost, obuhvaćajući geološku, geomorfološku i pedološku raznolikost litosfere i pedosfere s prostorno-vremenskim uzročno-posljedičnim poveznicama, sastavni je element prirodne raznolikosti ekosustava i ekosfere, ali je u zaštiti prirode podređena bioraznolikosti i često reducirana na geološke procese. Temeljni dokumenti zaštite i održivog korištenja georaznolikosti su Zakon o zaštiti prirode te Strategija i akcijski plan zaštite biološke i krajobrazne raznolikosti RH. Georaznolikost, tj. njezina zaštita u Hrvatskoj suočava se s brojnim izazovima, posebno u kontekstu procjene utjecaja na okoliš (PUO). Glavni izazovi uključuju nedostatak specifične zakonske regulative, ograničeni stručni kapaciteti institucija i ovlaštenika, nedostatak jedinstvene metodologije vrednovanja georaznolikosti, nedostatak i nepotpunost baza podataka, niska svijest javnosti o važnosti georaznolikosti i pritisci na georaznolikost. Za prevladavanje ovih izazova potrebno je uspostaviti jasne smjernice za procjenu georaznolikosti u PUO, ulagati u edukaciju stručnjaka, razviti nacionalnu bazu podataka i podizati svijest o važnosti georaznolikosti. Integracija georaznolikosti u prostorno planiranje i održivi razvoj ključna je za očuvanje hrvatske geobaštine.

**Ključne riječi:** georaznolikost, geobaština, procjena utjecaja

## Effectiveness of Overriding Public Interest in the Case of the Hydropower Plant Project Mokrice

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### Abstract

The planned Mokrice hydropower plant on the lower Sava River has sparked a decade-long legal and political debate over the balance between energy production and environmental protection. The project, classified as a priority for Slovenia's renewable energy strategy, intersects with strict EU environmental regulations, particularly Natura 2000 site protections. This paper analyzes the application of the "overriding public interest" (OPI) principle under the EU Habitats Directive in the Mokrice case, focusing on administrative decisions, court rulings, and the evolving interpretation of OPI in the context of climate goals and biodiversity safeguards. We examine how Slovenian authorities justified OPI by emphasizing national energy security, decarbonization commitments, and the integration of renewables into the power system. At the same time, we assess the adequacy of compensatory measures designed to mitigate irreversible habitat impacts and scientific principles. The case illustrates broader tensions within EU environmental law: how to reconcile urgent climate action with the legal obligation to maintain favorable conservation status and implement EU guidelines on two fish paths. By tracing the legal trajectory and institutional arguments, the paper highlights critical lessons for future energy infrastructure projects seeking OPI approval, underscoring the need for transparent criteria, rigorous ecological assessment, and proportionality in balancing competing public interests.

**Keywords:** hydropower plant, overriding public interest, decarbonization

## Time efficiency in Appropriate assessment considering DSH principle in the case of spatial plan for Ptuj – Markovci motor way in Slovenia

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### Abstract

Since 2004, Slovenia has applied the “Do No Significant Harm” (DSH) principle in nature conservation through the Nature Conservation Act, requiring appropriate assessments within Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA). While these procedures often last years, the regional road Ptuj–Markovci illustrates how proper application of DSH can dramatically reduce delays. Planned in 2000 without DSH consideration, the local spatial plans for motorway faced nearly two decades of conflict and procedural deadlock. As intergovernmental expert group subsequently developed a systematic method combining ecological sensitivity mapping, field verification, harmonized scoring, and joint on-site consultations. Six full-day expert sessions produced consensus on an alignment in just two years, reducing the planning timeframe by 90 %.

The case shows that embedding DSH criteria at the outset—supported by transparent, comparable evaluation of alternatives—prevents redesigns, litigation, and institutional gridlock. Appropriate assessment thus becomes not only a legal safeguard but also a planning tool for balancing development and biodiversity protection. The Slovenian experience demonstrates that rigorous, evidence-based methods improve decision quality, foster stakeholder agreement, and offer a replicable model for EU Member States seeking to streamline infrastructure planning in sensitive environments without weakening conservation standards.

**Keywords:** Do not Significant Harm (DSH), strategic environmental assessment (SEA), time efficiency

## Critical Habitat Assessments: Benefits, Challenges and Examples

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### Abstract

Critical habitat assessment is a practical tool for identifying sites of exceptional biodiversity importance and guiding conservation and development decisions. This presentation synthesizes the conceptual advantages - targeted protection of endangered biodiversity, prioritization of limited conservation funds, and improved mitigation of development impacts - with common challenges encountered in the region: limited and fragmented biodiversity data, inconsistent legal frameworks, transboundary species dynamics, stakeholder conflicts over land use (e.g., hydropower, mining, infrastructure), and capacity constraints for long-term monitoring. Drawing on recent regional experience, we illustrate approaches and lessons from infrastructural project in Croatia and highlight methodological combinations that worked well - integrating targeted field surveys, species distribution models, mitigation hierarchy including offset program, and participatory stakeholder engagement - and emphasize joint action with national inventories and EU/Natura processes where relevant. Finally, we propose practical recommendations: invest in standardized data collection and sharing, embed critical-habitat outputs in permitting and planning, and couple assessments with adaptive monitoring to ensure conservation outcomes. These steps can help translate critical habitat assessment into lasting protection of the most threatened components of biodiversity.

**Keywords:** Critical habitat assessment, mitigation hierarchy, offset program

## **Pregled Izvješća o stanju očuvanosti vrsta i stanišnih tipova u Hrvatskoj za period 2019.-2024.**

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### **Sažetak**

Izvješće o stanju očuvanosti izrađuje se svakih 6 godina temeljem obveze iz članka 17. Direktive o staništima (Direktiva Vijeća 92/43/EEZ). Izvješće 2025. izrađeno je za razdoblje 2019.-2024. Izvješća sadrže rezultate analiza i ocjene stanja očuvanosti vrsta i stanišnih tipova od EU interesa u Republici Hrvatskoj. Prvo izvješće za Republiku Hrvatsku izrađeno je 2019. godine. Stanje očuvanosti određuje se uzimajući u obzir stanje i trendove: područja pojavljivanja, veličine populacije, površine i kvalitete staništa, te izgleda za budućnost (tzv. parametri stanja). U pregledu izvješća istaknuti su glavni rezultati ocjene stanja očuvanosti. Za razliku od izvješća 2019., u izvješću 2025. značajno je smanjen broj nepoznatih ocjena. Ne postoji kopneni stanišni tip za koji nije određeno stanje očuvanosti dok je za vrste smanjen udio nepoznatih ocjena sa 47% na 15%. Najveći broj povoljnih ocjena (FV) za vrste nalazimo u mediteranskoj, a za staništa u alpskoj biogeografskoj regiji. Najveći udio nepovoljno-loših (U2) ocjena za vrste i za stanišne tipove javlja se u kontinentalnoj biogeografskoj regiji. Glavni pritisci na kopnene stanišne tipove su: sukcesija, promjene u režimima oborina i invazivne vrste, a za morske: različite ljudske aktivnosti koje uključuju sport, turizam i rekreaciju te izgradnja cesta, putova i povezane infrastrukture. Najviše uočenih pritisaka na vrste vezano je uz fragmentaciju staništa, korištenje pesticida, zapuštanje travnjaka i promjene kvalitete staništa.

**Ključne riječi:** izvješće o stanju očuvanosti, ocjena stanja očuvanosti, stanje vrsta i stanišnih tipova

## A deep dive into species sensitivity mapping in Croatia

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### Abstract

The amended RED III Directive has recognized that the EU's ambitious decarbonization and energy security targets cannot be met without better integration between energy and spatial planning, which includes proactive identification of sites for the buildout of renewable energy sources (RES). In order for RES siting to be accurate and useful, a wealth of information about the environment, biodiversity and energy development potential needs to be condensed into simple, actionable maps. The stakes are particularly high because of the coupling of RE siting and looser environmental permitting requirements in RED III (i.e. Renewables Acceleration Areas, or RAAs). Because of this, if the siting is performed poorly, or with poor stakeholder communication, RE projects in these sites risk public backlash, delays and causing harm to nature and livelihoods.

In Croatia, The Nature Conservancy partnered with the Hrvoje Požar Energy Institute (EIHP) to map the sensitivity of select species groups (bats, birds, large carnivores) to solar and wind development, in order to support and inform subsequent RAA identification. A bespoke approach was developed to combine the diverse set of data sources, including different species distribution models, home range estimates based on point density analyses of GPS-tagged animals, important point data such as known bird or bat colonies, areas critical for connectivity and more. In this presentation, I will unpack the moving parts of this complex analysis, explain how to interpret the results and discuss the many encountered challenges.

**Keywords:** renewable energy siting, GIS, sensitivity mapping, biodiversity sensitivity, species distribution modelling

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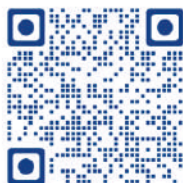
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Osim središnje lokacije u Sesvetkom Kraljevcu, u kojem se nalaze i tri pogona, izgradili smo mrežu sabirališta po čitavoj Hrvatskoj kako bismo skratili vrijeme od nastanka nusproizvoda do njegove prerade.

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- > Inženjersko projektiranje > EU taksonomija i primjena
- > Poslovi zaštite okoliša
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S više od 35 godina iskustva, tvrtka danas zapošljava vrhunski educirane stručnjake različitih profila te nudi usluge inženjerskog projektiranja i konzultacije u domeni zaštite okoliša, prirode i održivog razvoja.

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