



# LES/WOOD

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### Razvojno-raziskovalne aktivnosti v lesarstvu v znamenju digitalizacije in biogospodarstva

Pred vami je nova številka revije Les/Wood, ki je nastajala v drugem letu pandemije Covid-19, ki je krojila dogajanje tudi v gozdno-lesni verigi. Znanstveni prispevki v tej reviji prikazujejo nova spoznanja o tem, kako in kdaj nastaja kasni les pri navadni smreki, kaj se dogaja z zaščitenim lesom smreke na prostem po daljšem času izpostavitve in kaj se zgodi s kemičnimi in mehanskimi lastnostmi pri termični modifikaciji lesa hitro rastoče plantažne lesne vrste *Gmelina arborea*, ki jo uvajajo na degradiranih območjih v Gani, da bi omejili krčenje gozdov. Nadalje prispevki prikazujejo mehanizme nastanka nanodelcev srebra na ligninu, uporabnost lesnih ostankov invazivnih drevesnih vrst za proizvodnjo peletov in toplotno prevodnost različnih bio-izolacijskih materialov na osnovi lesnih ostankov. Vse naštetje teme se dobro vklaplja v razvojni koncept biogospodarstva, ki je posebej pomemben pri zagotavljanju dolgoročnejšega obvladovanja podnebnih sprememb in prehoda v nizkoogljično družbo. Biogospodarstvo kot pomembna razvojna usmeritev tako v gozdnem delu gozdno-lesne verige kot v predelavi lesa je bilo posebej izpostavljeno na Dnevih slovenskega lesarstva 2021 in na 9. Razvojnem dnevu gozdno-lesnega sektorja, kjer je bilo v letu 2021 identificiranih kar 59 aktualnih projektov, sofinanciranih iz javnih sredstev Republike Slovenije in/ali EU. To kaže na izjemno razvojno moč te verige, ki je ključna za njeno dolgoročnejšo uspešnost, poleg kratkoročnih odzivov podjetij na spremembe poslovnega okolja z uvajanjem novih tehnologij, poslovnih modelov in konceptov v svoja poslovanja.

Skupne teme razvojnih usmeritev bi poleg biogospodarstva lahko strnili še v eno ključno temo, to je digitalizacija oz. digitalna transformacija podjetij,

panoge in družbe v celoti. Koncept digitalizacije z novimi tehnologijami in storitvami, ki so v času pandemije Covid-19 omogočale, da je družba bolj ali manj učinkovito delovala kljub (skoraj) popolnemu zaprtju javnega in gospodarskega okolja, še vedno predstavlja za podjetja (in državo) precejšen izziv. Največji izziv so digitalne kompetence managerjev, zaposlenih in vseh ljudi, ki so ključne za uvajanje novih digitalnih tehnologij in konceptov, ki so v sodobni družbi nujni za preživetje in nadaljnji razvoj. Razvoju le-teh je namenjen evropski projekt »All-View«, katerega cilj je digitalizacija in poenotenje izobraževalnih procesov na vseh nivojih izobraževanja na področju lesarstva, ki bodo vključevali digitalne vsebine za razvoj digitalnih kompetenc učečih se, in bodo temeljili na sodobni, pametni platformi. Ravno problem pomanjkanja digitalnih znanj in kompetenc v lesarstvu pa je bila skupna ugotovitev okrogle mize, ki je sledila predstavitvam projektov na prej omenjenem 9. Razvojnem dnevu gozdno-lesnega sektorja. Da pa je digitalizacija zelo prisotna tudi v lesarstvu, so na tem dogodku na primerih dobre prakse pokazali predstavniki več podjetij.

Glede na izkazano razvojno moč gozdno-lesne verige pri reviji Les/Wood tudi v prihodnje upamo na dotok zanimivih prispevkov. Hvala vsem, ki pomagata pri pripravi revije, še posebej (anonimnim) recenzentkam in recenzentom, ki ste nam s svojim ažurnim in kakovostnim delom priskočili na pomoč tudi pri pripravi te številke revije Les/Wood.

## R&D activities in woodworking in the sign of digitalization and bioeconomy

In front of you is a new issue of the journal *Les/Wood*, which was created in the second year of the COVID-19 pandemic, which also shaped the entire forest wood chain. The scientific articles in this journal present new insights into how and when larch wood is formed in spruce, what happens to protected spruce wood outdoors after a long exposure period, and what happens to the chemical and mechanical properties of thermally modified wood from the fast-growing plantation species *Gmelina arborea*, which is being introduced into degraded areas in Ghana to limit deforestation. In addition, this issue presents the mechanisms of the formation of silver nanoparticles on lignin, the usability of wood residues from invasive tree species for the production of pellets, and the thermal conductivity of various wood residue-based bio-insulation materials. All these topics fit well into the development of the concept of the bioeconomy, which is of particular importance for the long-term management of climate change and the transition to a low-carbon society. The bioeconomy as an important development direction in the forestry part of the forest-wood chain, as well as in wood processing, was particularly highlighted at the Days of the Slovenian Wood Sector 2021 and at the 9th Development Day of Forest-Wood Sector, where no less than 59 current projects supported by public funds of the Republic of Slovenia and/or the EU were identified. This shows the exceptional developmental strength of this chain, which is crucial for its long-term success, in addition to the short-term reactions of companies to changes in the business environment by introducing new technologies, business models and concepts into their businesses.

In addition to the bioeconomy, the common themes of the development orientations can be summarised in another key theme, namely digitalisation or the digital transformation of companies, industries and society as a whole. The concept of digitalisation with new technologies and services, which enabled society to operate reasonably efficiently despite the (almost) complete compartmentalisation of the public and economic environment during the COVID-19 pandemic, continues to pose significant challenges for both businesses and the state. The greatest challenges lie in the digital com-

petencies of managers, employees, and the general population. These competencies are crucial for the adoption of new digital technologies and concepts in society, to aid both its further development and ultimate survival. The European project "AllView" is aimed at the development of these competencies, with the goal of digitalisation and unification of educational processes at all levels of education in the field of wood, which includes digital content for the development of digital competences of learners and is based on an up-to-date, smart platform. The lack of digital knowledge and competences in the wood sector was one of the main findings of the roundtable discussion which followed the presentations of projects at the previously mentioned 9th Development Day of the Forest-Wood Sector. However, with presentations of cases of good practice at this event, representatives of several companies showed that digitalisation is already present in the wood sector.

Due to the proven development strength of the forest-wood chain, an (increased) influx of interesting articles at *Les/Wood* journal can be expected in the future. Our thanks go to all those who contribute to the preparation of the journal, especially to the (anonymous) reviewers who help us with their up-to-date and high-quality work in the preparation of this issue of *Les/Wood*.