

**DIGITALISATION AND CIRCULAR ECONOMY:  
forestry and forestry based industry implications**

12<sup>th</sup> International Scientific Conference WoodEMA 2019

Varna, September, 11-13, 2019

**CIRCULAR ECONOMY  
FROM THE PERSPECTIVE  
OF SCIENTIFIC RESEARCH PAPERS  
IN THE FORESTRY  
AND WOOD-BASED SECTOR IN POLAND**



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# The idea of research

- The search for the possibility of implementing a circular economy ideas by the forest- and wood-based industry sectors is a challenge for scientific research.
- The authors identified the main research topics by Polish scientists and the results were published in the years 2008-2018.
- The analysis covered selected bibliographic databases and impact factors of analyzed papers.
- Finally current recommendations for the development of research in this area have been made.

# Why?

- Scientific journals are still an important platform for modern scientific communication, which also supports knowledge-based forest management.
- In addition, to traditional methods, the workshop complements the tools of science and, above all, bibliometrics using international bibliometric indicators.
- This makes it possible to compare journals and, consequently, to identify the most influential titles and research topics that shape the state and development prospects of a given field of knowledge.

# Data and methods (1)

- In the study, based on statistical and bibliometric secondary data, an attempt was made to indicate influential Polish titles in the area of forest sciences.
- Various bibliometric assessment methods used in the selected global databases (incl. WoS, Scopus, Google Scholar, Index Copernicus) have been used for this purpose.
- The analysis was conducted on the example of the selected Polish forestry journals.

Table 1. Categories (according to the WoS and Scopus) of analyzed Polish natural and forest magazines with IF in 2017

Journal title (in Web of Science)	Category (scientific discipline)	The number of journals in the category [WoS (Scopus)]	Position based on the Journal Impact Factor [WoS (Scopus)]
<b>Mammal Research</b>	Zoology	166 (385)	64 (110)
<b>Polish Journal of Ecology</b>	Ecology	158 (591)	135 (430)
<b>Acta Biologica Cracoviensia, Series Botanica</b>	Plant science	222 (404)	170 (156)
<b>Acta Societatis Botanicorum Poloniae</b>	Plant science	222 (404)	144 (216)
<b>Archives of Environmental Protection</b>	Environmental science	241 (192)	190 (59)
<b><u>Dendrobiology</u></b>	Forestry	66 (139)	47 (38)
<b><u>Sylvan</u></b>	Forestry	66 (139)	51 (90)
<b><u>Drewno-Wood</u></b>	Forestry	66 (139)	58 (70)
	Engineering	-- (323)	-- (164)

Source: authors' own elaboration based on (Materska et al., 2019)

Table 2. Number of quotations in Scopus of articles published in Polish forest science journals (2018)

No.	Journal	Citation count	Documents	Cite Score	SJR	SNIP	IF
1.	Mammal Research	188	132	1,42	0,644	0,774	1,119
2.	Polish Journal of Ecology	107	158	0,68	0,253	0,436	0,590
3.	Acta Biologica Cracoviensia, Series Botanica	89	62	1,44	0,473	0,928	1,111
4.	Acta Societatis Botanicorum Poloniae	120	126	0,95	0,281	0,509	0,718
5.	Archives of Environmental Protection	231	135	1,71	0,489	1,011	1,689
6.	Dendrobiology	147	96	1,53	0,375	0,990	1,262
7.	Sylwan	397	501	0,59	0,321	0,592	0,691
8.	Drewno-Wood	78	95	0,82	0,324	0,504	0,857
9.	Folia Forestalia Polonica, Series A	81	139	0,67	0,312	0,569	-
10.	Central European Forestry Journal	54	79	0,68	0,180	0,399	-

Source: authors' own elaboration based on (Materska et al., 2019)

## Data and methods (2)

- Some bibliometric techniques were used, including Impact Factor, Hirsch Index, SCImago Journal Rank, Index Copernicus Value.
- The collected data were compared and interpreted in a bibliometric paradigm, referring to the level of citations and the so-called "scientific impact" of journals.
- Descriptive and exploratory applications of bibliometry were used to observe phenomena and tendencies in the development of forest / wooden scientific journals .

Table 3. Size of the SJR: Scientific Journal Rankings- Scimago index for Polish forest magazines (2018)

No.	Journal	SJR	H Index	Total Docs. 2018	Total Docs. 3 years	Total Refs. 2018	Total Cites 3 years	Citable Docs. 3 years	Cites/ Docs. 2 years	Ref./ Doc. 2018
1.	Dendrobiology	0,375	14	17	96	959	146	96	1,77	56,41
2.	Drewno-Wood	0,324	9	25	95	730	77	95	0,85	29,20
3.	Sylwan	0,321	8	99	220	3195	129	220	0,59	32,27
4.	Folia For. Pol. (A)	0,312	8	30	88	917	59	88	0,60	30,57
5.	CEFJ	0,180	2	23	24	1219	14	24	0,58	53,00



# Table 4. Size of the ICV index (Index Copernicus Value) for Polish selected journals: topic 'forestry'

No.	Journal	ICV 2017	IC Citation	GSI 2019
1.	Journal of Plant Protection Research	121,70	498	277
2.	Archiwum Fotogrametrii, Kartografii i Teledetekcji (Archives of Photogrammetry, Cartography and Remote Sensing)	96,35	677	1410
3.	Leśne Prace Badawcze (Forest Research Papers)	94,71	437	1150
4.	Acta Scientiarum Polonorum Silvarum Colendarum Ratio et Industria Lignaria	92,81	349	131
5.	Intercathedra	89,60	128	563
6.	Progress in Plant Protection	88,12	2590	5080
7.	Journal of Research and Applications in Agricultural Engineering	86,14	1328	2270
8.	Ecological Questions	83,73	91	198
9.	World News of Natural Sciences	82,84	3	44
10.	Annals of WULS - Forestry and Wood Technology. Zeszyty naukowe SGGW (Annals of Warsaw Agricultural University - Forestry and Wood Technology)	80,40	275	1050
11.	Forestry Letters	71,28	24	103
12.	Technika Rolnicza Ogrodnicza Leśna (Agricultural, Horticultural and Forest Engineering)	53,60	619	1,53
13.	Przegląd Leśniczy (The Forestry Review)	51,62	154	1830
14.	Studia i Materiały Ośrodka Kultury Leśnej (Studies and Materials of the Forest Culture Centre)	45,58	1	222
15.	Chrońmy Przyrodę Ojczystą (Let's Protect Our Indigenous Nature)	42,46	1140	3360

# Results (1)

- The main research topics in forest sciences, which in the studied period (2010-2018) were undertaken in the works and publications of Polish scientists, included works on:
  - ✓ **forest breeding** (around 349 topics of keywords),
  - ✓ nature protection (5380 keywords), but directly **forest protection** (334 keywords),
  - ✓ hunting management (1700 keywords, directly 21),
  - ✓ **forest management** (1010 keywords),
  - ✓ **forest use** (245 keywords, directly 59)
  - ✓ and forest tourism (47 keywords, incl. 21 directly silvaturistics).

## Results (2)

- Meanwhile, the topics of forestry economics appeared relatively rarely in research programmes, most often in the ecological context or renewable energy (including green economy, use of wood waste, and marginally "second life of wood").
- It is worth noting that the dominating keyword in the analysed scientific publications on forest sciences was 'ecology', including 'bioresources' in the discipline of forestry and 'furniture' in the discipline of wood science and technology.
- **The concept of 'circular economy' appeared directly in the analysed period only in 34 cases .**
- Of course, the key words 'wood' and 'forest' were excluded.

## Conclusion 1

- The subject matter of circular economy, although directly related to the paradigm of sustainable development originating from forest sciences, is present in Polish scientific publications on forestry relatively rarely, most often indirectly, fragmented.

## Conclusion 2

- Popularization of current research directions in forestry is served by scientific journals in the field of forest sciences, Polish and foreign.
- Unfortunately, the position of these journals, analysed from the perspective of their presence and prestige in recognised world bibliographic databases, is low.
- This means, first of all, that a relatively small influence in the international scientific environment is played by foreign-language publications of Polish authors in the field of forestry, including those from the field of economics of forestry.
- Moreover, what is particularly important, also the impact of publications on forest sciences in Polish is marginalised, as it is not worthwhile for scientists to publish their papers in the national language from the point of view of the value of scientific achievements under evaluation.
- Foresight forecasts were therefore only partially fulfilled.

## Conclusion 3

- The biggest influence from the point of view of the international position of scientific journals in forest science is played by the journals 'Dendrobiology' and 'Sylwan' (forestry), and also 'Drewno-Wood' (in woodworking).
- Scientific journals that have the highest number of quotations registered in databases popular in Poland (Google Scholar, Index Copernicus, Publish or Perish) are: "Sylwan", "Leśne Prace Badawcze" and "Przegląd Leśniczy" (2018).
- From the perspective of leading global databases (Web of Science, Scopus), the quotation lists are only present in: "Dendrobiology", "Drewno" and "Sylwan".

## Conclusion 4

- The main research topics in the field of forest science in Poland include the following areas: forest breeding, nature conservation, forest protection, hunting management, forest management, forest use and forest tourism. On the other hand, the subject matter of forestry economics is marginally present in research programmes.
- The issues of sustainable forest management were taken up, indeed, in the context of nature protection, fragmented in the thematic scope of green economy and effective management of wood waste, as well as partly in relation to the research on international competitiveness of the wood-based sector, including mainly the furniture sector.

# General conclusion

- Where's WoodEMA?
- Is there a place for WoodEMA on the Polish ministerial list of scientific publishers?



# Do we need science?

- That is the question?
- This is because science, which, as Józef Rivoli noted, is sometimes even very distant from life practice and (but) still remains the most effective stimulus for this practice.

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- **Благодаря за вниманието!**
- **Thank you for Your attention!**

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