



## Research trend: Hidden diamonds – The values and risks of online repository documents for forest policy and governance analysis



Sari Rahayu<sup>a</sup>, Dwi Laraswati<sup>a</sup>, Andita A. Pratama<sup>a</sup>, Dwiko B. Permadi<sup>a</sup>, Muhammad A.K. Sahide<sup>b</sup>, Ahmad Maryudi<sup>a,\*</sup>

<sup>a</sup> Faculty of Forestry, Universitas Gadjah Mada, Yogyakarta, Indonesia

<sup>b</sup> Faculty of Forestry, Universitas Hasanuddin, Makassar, Indonesia

### ARTICLE INFO

#### Keywords:

Online repository  
Research methods  
Forest policy  
Forest governance  
Qualitative research  
Social research

### ABSTRACT

Sound forest policy and governance analysis requires rich empirical evidence, collected through the use of a (possibly) combination of various scientific methods. Scientific communities are currently offered with abundance of digital data, information and scientific materials, made fully or partially available through the explosive development of various types of online repositories. Nonetheless, the rich treasures are not optimally used in forest policy and governance analysis yet. We analysed how researchers can make use of online repositories, analysing their values and risks. Using the case of community forestry policy and elaborating the Indonesian contexts, we have observed several types of online institutional and non-profit repositories, archiving valuable documents/ materials for qualitative inquiries. Valuable materials found from the observed online repositories include policy documents (laws, regulations, decrees), local journal articles, biophysical and socio-demographic data, groups' constitutions, community forestry rights and agreements, local maps, as well as graphics and photos. We understand the concerns about the scientific quality of the repository materials. Before utilising them, researchers are encouraged to have clear visions and objectives on the types of materials relevant to their studies.

### 1. Introduction

Over the past two decades, forest policy has become a vibrant research sub-discipline in political sciences, even regarded as one of the most advanced areas of the multiple social science disciplines (Maryudi et al., 2018). It focuses on analysing and explaining contemporary complex issues and challenges with regard to the nexus between human and forests (Fisher et al., 2017). Forest policy analysis has also spurred a number of advances, in terms of theoretical frameworks (e.g. Arts and Buizer, 2009; Krott et al., 2014) and methodological innovations (e.g. Schusser et al., 2012; Siegner et al., 2018).

Increasingly, forest policy research has relied on qualitative approach of document content analysis (Siegner et al., 2018). Analysis of documents has been used as either the essential approach (for instance see Sahide et al., 2018) or a complement of the arguably more common methods of in-depth interviews and participant observations (e.g. Fatem et al., 2018; Susanti and Maryudi, 2016). With a few exceptions of recent work (e.g. Sahide and Giessen, 2015), the current scientific

literature is yet to optimally use materials from repositories as sources of empirical evidence. A repository refers to a (physical and online) storage system of artefacts/ materials (documents, data, information), used usually for reporting, analysis and sharing (Bernstein and Dayal, 1994).

To illustrate the limited use of repository materials in scientific work, we analysed Scopus-indexed literature on the topic of community forestry policy. We use the topic as an example since it has become a prominent topic of forest policy and governance over the past four decades, allowing us to collect as many as possible scientific literature. More importantly, there are substantial data gaps, such as population dynamics, market forces, and biophysical factors, in the current community forestry literature (Hajjar et al., 2016). In Scopus, we found in total of 1070 articles,<sup>1</sup> only a quarter of which used repository materials as empirical evidence.

One of the possible explanations of the limited use of repository materials in previous studies may include the difficulties in accessing them. Trigg et al. (1999) point out that important documents were

\* Corresponding author at: Faculty of Forestry, Universitas Gadjah Mada, Yogyakarta, Indonesia.

E-mail address: [ahmad\\_maryudi@ugm.ac.id](mailto:ahmad_maryudi@ugm.ac.id) (A. Maryudi).

<sup>1</sup> Using the following keywords: ("community forestry" OR "social forestry" OR "Community forest tenure" OR "small scale forestry" OR "smallholder forestry" OR "community based forestry" OR "community based forest management" OR "customary forest" OR "village forest" OR "rural forest") AND\* Policy,

stored in file cabinets (in physical forms) or scattered throughout offices so that retrievals for later use is seldom. This is evident in the few studies utilising repository documents. For instance, when describing the legal frameworks of forest-land administration in Indonesia, [Sahide and Giessen \(2015\)](#) had to collect the related legal/ policy documents from the physical archives of various organizations. This compromised the effectivity of their research, i.e. spending more time in collecting data.

The recent trend on the digitalisation (see the next section) has seen abundance of digital data, information and scientific materials made fully or partially available through the explosive development of various types of online repositories. Research communities studying forest policy and governance should pay increased attention to this development. It opens windows of opportunities of the more extensive uses of online repositories, and the materials stored within, in forest policy and/or social science research in general. This article aims to explore the potentials of online repositories, and the materials stored within, for strengthening forest policy research. More specifically, it analyses their values and risks. We contextualize the analysis with community forestry policy in Indonesia.

## 2. The values of online repositories

The past decade has seen the transformation of repositories; information achieving and sharing have been changing into the digital direction. The main idea is to provide anyone (with internet connection) in the world with access to the materials ([Repanovici, 2012](#)). A first digital repository emerged in 2000 when the Massachusetts Institute of Technology (MIT) and Hewlett Packard Company collaborated to develop DSpace<sup>2</sup> ([Smith et al., 2003](#)). There has since been an explosion of interests in developing online repositories ([Pickton and McKnight, 2007](#)). For instance, by November 2018, there have been 3804 global repositories ([DOAR, 2018](#)). The contents range from published articles and book chapters, datasets, theses/ dissertations, conference papers and grey literature and ephemera ([Marsh, 2015](#)).

Universities and research institutions increasingly show interests in establishing institutional repositories, among others driven by the interests of an increased institutional prestige from exposing research carried out by staff and students ([Cullen and Chawner, 2010](#)) and an improved “impacts” of the research ([Bonilla-Calero, 2014](#)). They often oblige the staff and students to self-archive their working papers, theses and dissertations, research and statistical reports, technical documentation, and even teaching materials, usually using Electronic Theses and Dissertations (ETD) platform. These repositories provide support for learning for scientists to avoid the recreation of what has already been produced in a specific research theme ([Lehman, 2007](#)). They can also be utilised as a platform for generating new innovation and ideas.

Using the same keywords (translated) as our search in Scopus, we found hundreds of undergraduate and graduate theses in the field of community forestry policy in the repository of authors' universities, which have started self-archiving just a couple years ago. They are mostly case studies containing rich description on chiefly what is occurring or has occurred. In this regard, the documents can greatly assist future researchers to select the cases for their studies. By using the documents, researchers will also be greatly helped in understanding the contexts, instead of starting their research from scratches.

In addition, the documents rich of empirical materials, statistics and graphics, such as biophysical (including the forest conditions) and socio-demographic data, groups' constitutions, community forestry

<sup>2</sup> is a digital open source system acting as a repository for intellectual outputs (research and educational materials) produced by an organization or institution ([Tansley et al., 2003](#)), built to give greater visibility and accessibility of the materials ([Smith et al., 2003](#))

rights and agreements, local maps, as well as photos. As previously mentioned, the current scientific literature on community forestry is still lacking of such data ([Hajjar et al., 2016](#)). It is not easy to gather such data in Indonesia, or possibly in many developing countries, where data management is usually poor even in official forest offices. Even when the data are available, accessing the data might need to follow complex bureaucratic processes for obtaining research permits. Using online repositories allows researchers to collect important empirical materials easier, and to conduct their studies in more efficient ways. It will reduce both time and costs ([He and Han, 2017](#)).

In addition, forest policy and governance analysis has increasingly relied on content analysis of policy documents issued by governments such as laws, government/presidential regulations and decrees, ministerial regulation, district and provincial decrees, and government/court decisions (see [Harahap et al., 2017](#); [Maryudi and Myers, 2018](#); [Wibowo and Giessen, 2018](#)). Obtaining such documents from governmental offices is often challenging as they are not always readily-available. Bureaucratic structures, in Indonesia for instance, keep changing that often results in poor management of policy documents and legal products.

In Indonesian case, we found an important open-access repository platform for legal products, i.e. HUKUMONLINE, 2019 (<https://www.hukumonline.com/pusatdata>). This website is apparently developed to provide a single stop for all policy documents produced in the country, and is connected with a number of search engines such as Google, making it easier for researchers to find a particular policy document. More importantly, the documents are sorted accordingly to document types (laws, government regulations, ministerial decrees, etc.) and topics (e.g. customary and agrarian issues, decentralisation and local autonomy, agriculture-forestry and fisheries, environment etc.), for the ease of researchers in retrieving the relevant legal documents for their studies. Although the bulk of the documents are in the original language (Bahasa Indonesia), the repository has started to include the official English translation, facilitating international researchers as well.

Content analysis of scientific literature is more common is forest policy and governance analysis (e.g. [Myers et al., 2017](#)). It primarily relies on articles from reputable journals and books or book chapters from reputable publishers. Articles from local and national journals are rarely captured in scientific work, with exception of those involving researchers with good knowledge on local languages. Local journals remain a reliable source of data as they have also undergone peer review processes ([Jacobs et al., 2000](#)). For this, we observe a quite powerful open-access repository, i.e. NELITI, 2019 (<https://www.neliti.com/id/>), which currently archives articles from 1675 (mostly) Indonesian journals. This repository links the materials stored with the original sources. The one-gate access of thousands of journals, equipped with a search engine facility, offer a great advantage to researchers as they do not need to check every single journal in finding relevant articles. In addition, there are no copyright issues when using this repository as the local journals are mostly open-access. Furthermore, this repository has also digitized old journal articles that were available only in printed version by the publishers that will help researchers, particularly when their work requires some historical backgrounds (for an example, [Sahide et al., 2018](#) using this approach). Old journal articles might offer research communities with additional empirics to make more powerful review and arguments in their work.

We argue, in this section, the potentials of online repositories as sources of empirical research evidence, including analyses of the types of repositories, data and information valuable for forest policy and governance studies. Nonetheless, we acknowledge that that not all datasets and materials provided by online repositories might not be useful. To address this, we discuss the risks of using online repository documents and strategies can be used by research communities to mitigate the risks in the following section.

### 3. Risks of using online repository documents and mitigating strategies

There are concerns about the quality of repository materials, as frequently raised (see Palavitsinis et al., 2014; He and Han, 2017; Pham-Kanter et al., 2014). As experienced by some of this paper's authors, many reviewers have often questioned the credibility of, and suggested the removals of the so-called grey literature. With tremendous amount of digital data, researchers may find it difficult to evaluate whether repository materials are valuable and satisfactory for scientific uses. For example, project proposals and interim reports, which are often archived for obtaining funding, may have little value as they contain limited empirical materials. Even when empirical evidence is there, researchers face challenges in making judgements about scientific values of the data (Uhlir, 2010).

The ability of the users to filter the resources relevant for their research is crucial in this regard (Sicilia et al., 2016; Prieto, 2009). In some cases, repositories also contain ambiguities as coding is made in general terms (Serrano-Vicente et al., 2018). Researchers need to be meticulous, and to make clear objectives in their studies to decide what types of data relevant to their studies. In addition, the users need to familiarise with the repositories, despite the fact that they have coded accordingly to specific categorisation (Alonso Gaona García et al., 2014).

Completeness of the data is also a common theme of concerns (Faniel et al., 2016). We also found it problematic in search engines despite the increasingly amount of materials being deposited as data are often unavailable due to the deletion of changes of web-addresses (also see Bonilla-Calero, 2014). In some cases, repositories -chiefly universities' repositories, provide only resumes or abstracts or important metadata. They make the full version available offline and is only for their own staff and students so that non-members need to work to get the complete data. The chief reason explaining this policy is to avoid plagiarism practices by their students and staff.

Although repositories only provide resumes, they remain a great help, as researchers are still well-guided in the data collection, in a way that they do not need to consider all documents when deciding to further probe the full version. In addition, the resumes often contain the author's contacts (i.e. email addresses), which is useful in case future users interested to obtain the complete documents. Collaboration with local researchers can be another key to mitigate the accessibility issues. In fact, data sharing and wider collaboration is one of the main themes of developing repositories. Local partners are also crucial when international researchers want to utilize the local-context materials, including those available in local languages.

### 4. Conclusion

Over the past few decades, social scientists have witnessed a number of advancement in qualitative research methods (see Bryman, 2015). Recently, we have seen trends in the development of various forms of online repositories, archiving tremendous of data, information and other forms of scientific materials. We argue in this piece that the rich treasures have high potentials in supporting qualitative research, including for forest policy and governance analysis. Online repositories may help researchers to conduct their studies more efficiently, in terms of time and costs, and the materials stored may improve the quality of the empirical evidence of scientific work. Using the case of community forestry policy and the Indonesian contexts, we have observed several types of valuable online repositories, and various forms of documents can be utilised for supporting forest policy and governance research. We further argue that research communities can no longer afford to overlook them. While not all repository materials can be used as meaningful empirical resources, it is the researchers themselves to filter them. Before utilising the resources, they need to have visions and objectives on the types of materials relevant to their studies.

### Acknowledgements

We would like to express our thank to an anonymous reviewer for his/ her constructive comments on the original version. This article is part of PMDSU research projects funded by Direktorat Riset dan Pengabdian Masyarakat-Direktorat Jenderal Penguatan Riset dan Pengembangan, the Ministry of Research, Technology and Higher Education of the Republic of Indonesia, grant numbers: 5698/UN1.DITLIT/DIT-LIT/LT/2018 and 5699 /UN.1.DITLIT/DIT-LIT/LT/2018.

### References

- Alonso Gaona García, P., Martín-Moncunill, D., Sánchez-Alonso, S., Feroso García, A., 2014. A usability study of taxonomy visualisation user interfaces in digital repositories. *Online Inf. Rev.* 38 (2), 284–304. <https://doi.org/10.1108/OIR-03-2013-0051>.
- Arts, B., Buizer, M., 2009. Forests, discourses, institutions: a discursive-institutional analysis of global forest governance. *Forest Policy Econ.* 11 (5), 340–347. <https://doi.org/10.1016/j.forpol.2008.10.004>.
- Bernstein, P.A., Dayal, U., 1994. An Overview of Repository Technology. Vol. 94. VLDB, pp. 705–713. <http://www.vldb.org/conf/1994/P705> (PDF Accessed on January 5, 2019).
- Bonilla-Calero, A., 2014. Institutional repositories as complementary tools to evaluate the quantity and quality of research outputs. *Libr. Rev.* 63 (1/2), 46–59. <https://doi.org/10.1108/LR-05-2013-0058>.
- Bryman, A., 2015. *Social Research Methods*. Oxford University Press, Oxford.
- Cullen, R., Chawner, B., 2010. Institutional repositories: assessing their value to the academic community. *Perform. Meas. Metrics* 11 (2), 131–147. <https://doi.org/10.1108/14678041011064052>.
- Directory of Open Access Repositories (DOAR), 2018. Growth of Open DOAR. [http://v2.sherpa.ac.uk/view/repository\\_visualisations/1.html](http://v2.sherpa.ac.uk/view/repository_visualisations/1.html), Accessed date: 30 November 2018.
- Faniel, I.M., Kriesberg, A., Yakel, E., 2016. Social scientists' satisfaction with data reuse. *J. Assoc. Inf. Sci. Technol.* 67 (6), 1404–1416. <https://doi.org/10.1002/asi.23480>.
- Fatema, S.M., Awang, S.A., Pudyatmoko, S., Sahide, M.A.K., Pratama, A.A., Maryudi, A., 2018. Camouflaging economic development agendas with forest conservation narratives: a strategy of lower governments for gaining authority in the re-centralising Indonesia. *Land Use Policy* 78, 699–710. <https://doi.org/10.1016/j.landusepol.2018.07.018>.
- Fisher, M., Maryudi, A., Sahide, M., 2017. Forest and society: initiating a southeast asia journal for theoretical, empirical, and regional scholarship. *Forest and Society* 1 (1), 1–7. <https://doi.org/10.24259/fs.v1i1.1369>.
- Hajjar, R., Oldekop, J.A., Cronkleton, P., Etue, E., Newton, P., Russel, A.J.M., Tjajadi, J.S., Zhou, W., Agrawal, A., 2016. The data not collected on community forestry. *Conserv. Biol.* 30 (6), 1357–1362. <https://doi.org/10.1111/cobi.12732>.
- Harahap, F., Silveira, S., Khatiwada, D., 2017. Land allocation to meet sectoral goals in Indonesia—an analysis of policy coherence. *Land Use Policy* 61, 451–465. <https://doi.org/10.1016/j.landusepol.2016.11.033>.
- He, L., Han, Z., 2017. Do usage counts of scientific data make sense? An investigation of the Dryad repository. *Library Hi Tech* 35 (2), 332–342. <https://doi.org/10.1108/LHT-12-2016-0158>.
- HUKUM ONLINE, 2019. *HukumOnlineCom*. <https://www.hukumonline.com> (Accessed 14 January 2019).
- Jacobs, N., Woodfield, J., Morris, A., 2000. Using local citation data to relate the use of journal articles by academic researchers to the coverage of full-text document access systems. *J. Doc.* 56 (5), 563–581. <https://doi.org/10.1108/EUM0000000007128>.
- Krott, M., Bader, A., Schusser, C., Devkota, R., Maryudi, A., Giessen, L., Aurenhammer, H., 2014. Actor-centred power: the driving force in decentralised community based forest governance. *Forest Policy Econ.* 49, 34–42. <https://doi.org/10.1016/j.forpol.2013.04.012>.
- Lehman, R., 2007. Learning object repositories. *New Directions for Adult and Continuing Education* 113, 57–66. <https://doi.org/10.1002/ace.247>.
- Marsh, R.M., 2015. The role of institutional repositories in developing the communication of scholarly research. *OCLC Systems & Services: International Digital Library Perspectives* 31 (4), 163–195. <https://doi.org/10.1108/OCLC-04-2014-0022>.
- Maryudi, A., Myers, R., 2018. Renting legality: how FLEGT is reinforcing power relations in Indonesian furniture production networks. *Geoforum* 97, 46–53. <https://doi.org/10.1016/j.geoforum.2018.10.008>.
- Maryudi, A., Nurrochmat, D.R., Giessen, L., 2018. Research trend: Forest policy and governance – Future analyses in multiple social science disciplines. *Forest Policy Econ.* 91, 1–4. <https://doi.org/10.1016/j.forpol.2018.02.007>.
- Myers, R., Intarini, D., Sirait, M.T., Maryudi, A., 2017. Claiming the forest: Inclusions and exclusions under Indonesia's 'new' forest policies on customary forests. *Land Use Policy* 66, 205–213. <https://doi.org/10.1016/j.landusepol.2017.04.039>.
- NELITI, 2019. *Repository Ilmiah Indonesia*. <https://www.neliti.com/id/> Accessed 14 January 2019.
- Palavitsinis, N., Manouselis, N., Sanchez-Alonso, S., 2014. Metadata quality in learning object repositories: a case study. *Electron. Libr.* 32 (1), 62–82. <https://doi.org/10.1108/EL-12-2011-0175>.
- Pham-Kanter, G., Zinner, D.E., Campbell, E.G., 2014. Codifying collegiality: recent developments in data sharing policy in the life sciences. *PLoS One* 9 (9), e108451.

- <https://doi.org/10.1371/journal.pone.0108451>.
- Pickton, M., McKnight, C., 2007. Is there a role for research students in an institutional repository? Some repository managers' views. *J. Librariansh. Inf. Sci.* 39 (3), 153–161. <https://doi.org/10.1177/0961000607080418>.
- Prieto, A.G., 2009. From conceptual to perceptual reality: trust in digital repositories. *Libr. Rev.* 58 (8), 593–606. <https://doi.org/10.1108/00242530910987082>.
- Repanovici, A., 2012. Professional profile of digital repository manager. *Library Hi Tech News* 29 (10), 13–20. <https://doi.org/10.1108/07419051211294473>.
- Sahide, M.A.K., Giessen, L., 2015. The fragmented land use administration in Indonesia—Analysing bureaucratic responsibilities influencing tropical rainforest transformation systems. *Land Use Policy* 43, 96–110. <https://doi.org/10.1016/j.landusepol.2014.11.005>.
- Sahide, M.A.K., Fisher, M.R., Maryudi, A., Dhiaulhaq, A., Wulandari, C., Kim, Y.-S., Giessen, L., 2018. Deadlock opportunism in contesting conservation areas in Indonesia. *Land Use Policy* 77, 412–424. <https://doi.org/10.1016/j.landusepol.2018.05.020>.
- Schusser, C., Krott, M., Devkota, R., Maryudi, A., Salla, M., Yufanyi Movuh, M.C., 2012. Sequence design of quantitative and qualitative surveys for increasing efficiency in forest policy research. *Allgemeine Forest Und Jagdzeitung (AFJZ)* 183 (3/4), 75–83.
- Serrano-Vicente, R., Melero, R., Abadal, E., 2018. Evaluation of Spanish institutional repositories based on criteria related to technology, procedures, content, marketing and personnel. *Data Technologies and Applications* 52 (3), 384–404. <https://doi.org/10.1108/DTA-10-2017-0074>.
- Sicilia, M.A., García-Barriocanal, E., Sánchez-Alonso, S., 2016. Community Curation in Open Dataset Repositories: Insights from Zenodo. <https://doi.org/10.1016/j.procs.2017.03.009>.
- Siegner, M., Hagerman, S., Kozak, R., 2018. Going deeper with documents: a systematic review of the application of extant texts in social research on forests. *Forest Policy Econ.* 92, 128–135. <https://doi.org/10.1016/j.forpol.2018.05.001>.
- Smith, M., Barton, M., Bass, M., Branschofsky, M., McClellan, G., Stuve, D., ... Walker, J.H., 2003. DSpace: An Open Source Dynamic Digital Repository. <http://hdl.handle.net/1721.1/29465>.
- Susanti, A., Maryudi, A., 2016. Development narratives, notions of forest crisis, and boom of oil palm plantations in Indonesia. *Forest Policy Econ.* 73, 130–139. <https://doi.org/10.1016/j.forpol.2016.09.009>.
- Tansley, R., Bass, M., Stuve, D., Branschofsky, M., Chudnov, D., McClellan, G., Smith, M., 2003. The DSpace Institutional Digital Repository System: Current Functionality. In: *Proceedings of the 2003 Joint Conference on Digital Libraries*, <https://doi.org/10.1109/JCDL.2003.1204846>.
- Trigg, R.H., Blomberg, J., Suchman, L., 1999. Moving document collections online: The evolution of a shared repository. In: Bgdker, S., Kyng, M., Schmidt, K. (Eds.), *Proceedings of the Sixth European Conference on Computer-Supported Cooperative Work*, 12–16 September 1999, Copenhagen, Denmark.
- Uhlir, P.F., 2010. Information Gulags, intellectual straightjackets, and memory holes: three principles to guide the preservation of scientific data. *Data Science Journal* 9 (6). <https://doi.org/10.2481/dsj.Essay-001-Uhli>. ES1-ES5, available at.
- Wibowo, A., Giessen, L., 2018. From voluntary private to mandatory state governance in Indonesian forest certification: Reclaiming authority by bureaucracies. *Forest and Society* 2 (1), 28–46. <https://doi.org/10.24259/fs.v2i1.3164>.