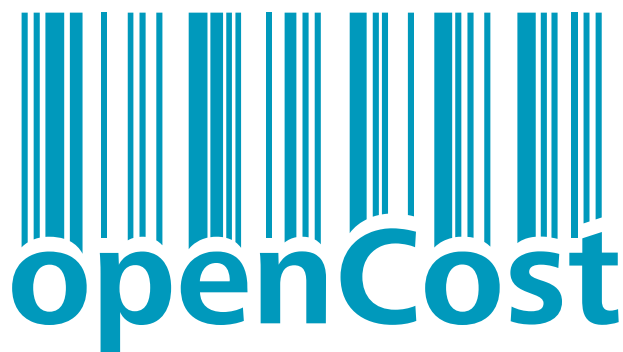




The Road to Publication Cost Transparency

Proceedings of the Expert Workshop
Hamburg, October 05th – 07th 2022



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Information Budget: $12 + 6 + 8 = 10$

Bernhard Mittermaier¹
Forschungszentrum Jülich, Central Library

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Abstract

The transformation of scientific publishing into Open Access is the impetus for a holistic view of the expenditure both for access to scientific literature and for publishing. What happens in a Publish & Read contract on a small scale must also be the approach overall, in accordance with the demands from funders (German Research Foundation, DFG) and policy advice (German Science and Humanities Council, WR). This article presents an information budget in its entire breadth as well as in the details necessary for practical implementation, both for the expenditure side and for the sources of funding. Included is a workshop report which demonstrates the practical suitability of the concept using the example of Forschungszentrum Jülich.

Keywords: information budget; open access; transformation; total cost of publication; publication costs; acquisition budget

¹<https://orcid.org/0000-0002-3412-6168>

4.1 Introduction²

In Germany, the topic of information budgets has been a hot topic in academic institutions and especially academic libraries, at the latest since the German Council of Science and Humanities (Wissenschaftsrat) called for the establishment of information budgets on p. 9 in its Recommendations on the Transformation of Academic Publishing: Towards Open Access [70]

The Council therefore recommends that scientific institutions record all components of their information budget and balance possible savings on the acquisition side as well as possible sources of income against rising expenditure on publication services.

The topic was subsequently addressed in a series of workshops organized by BMBF's open-access.network project³. The DFG project openCost [45] addresses aspects of the topic at the operational level and held a hands-on lab and expert session at the German Library Congress in Leipzig [71] and an expert workshop in October 2022 [72]. In addition to this, the DFG project Transform2Open [49] deals with the conceptual aspects of transformation.

This article attempts to describe all components of an information budget and to mirror this conceptual approach with a real example.

4.2 The concept of an information budget

4.2.1 Emergence

To finance Gold Open Access publication fees, the first academic institutions set up publication funds in the first decade of the 21st century [73]. At the beginning of the second decade, Ralf Schimmer called for the “re-contextualisation of acquisition budgets”, i.e. the integral consideration of publication and subscription expenditure and the transformation of acquisition expenditure into publication expenditure [74]. In an international discussion, this integral view was often

²This article is based on a presentation given at the expert workshop openCost: The Road to Publication Cost Transparency, Hamburg, 05.–07.10.2022 <https://juser.fz-juelich.de/record/915882> and on a publication in German language [10].

³Workshops Budget Development in the Context of Open Access Transformation, <<https://open-access.network/fortbilden/thematische-workshops/workshops-budgetentwicklung-im-kontext-der-open-access-transformation>>, accessed: 13.12.2022.

called for, often under the catchphrases *total cost of ownership* [75, 76] or *total cost of publication* [77, 78]. In 2015, public accounting of open access (OA) publication fees began as part of the OpenAPC project [63] and in 2017, the public presentation of all publication fees and acquisition costs by Forschungszentrum Jülich in its Open Access Barometer [79]. On a much larger scale, university institutions in the UK published the subscription costs paid by them [80]. The Open Access Working Group of the Digital Information priority initiative of the Alliance of Science Organizations in Germany recommended such an approach to all scientific institutions [81]. Furthermore, the Ad Hoc Working Group on Open Access Gold of the Priority Initiative recommended in 2016 [82]

that libraries create the necessary structural conditions for this and jointly focus on publication funds and acquisition budgets as an integral part of their budget planning and management. Institutions with multi-tiered library systems, in the context of which subscriptions are jointly funded by several parties, should seek to centralize funds to ensure monitoring and control of financial flows between publishers and academic institutions.

For a long time, however, these appeals found little resonance, all the more so with regard to a public presentation of the results, which even led to subversive approaches [83].

Now, at the beginning of the 2020s, the topic is being discussed more broadly as information budget. An early treatment was carried out by Heinz Pampel in 2019 [12]; in 2022 he deepened his considerations [84]. On a very practical level, discussions arose (usually without actually mentioning the term information budget) when institutions participating in DEAL contracts were asked for “voluntary additional payments” as part of the True-Up in autumn 2020 [85] and many institutions did not comply with this request. While there was a *de facto* saving of Hybrid OA costs, these were funded directly by academia prior to the DEAL contracts, which meant that the funds were not available in the library budgets for post-payments. Great momentum was created at the beginning of 2021 by the German Research Foundation’s (DFG) funding programme Open Access Publication Funding. Its overarching aim is “to create structural adjustment in financial flows, thus enabling the transformation of open access and improving transparency regarding the costs for open access publication of research results.” [14] Applicant institutions must outline how they intend to achieve this aim, which ultimately entails the creation of information budgets. Then, at the beginning of 2022, the

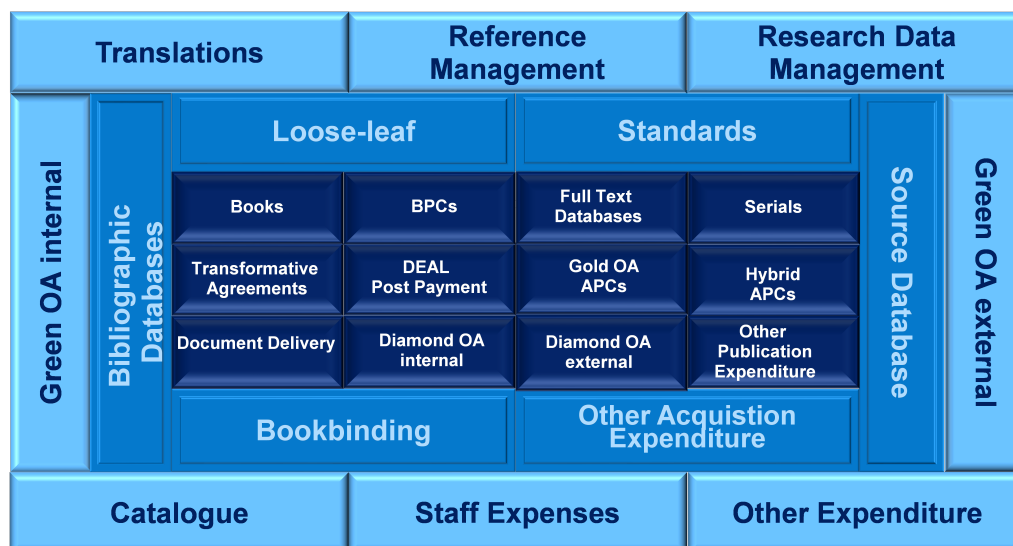


Figure 4.1: Shell model of the information budget

aforementioned Recommendations on the Transformation of Academic Publishing: Towards Open Access [70] were published by the German Council of Science and Humanities. These recommendations also take a holistic approach: It is not *only* about interdependencies between journal subscriptions and publication fees for journal articles in OA, but fundamentally about all expenditure (and income) for both the procurement of information and for publishing.

In the following, an information budget is conceptualized on the expenditure side ([subsection 4.2.2](#)) and the income side ([subsection 4.2.3](#)).

4.2.2 The expenditure side

The proposal for an information budget in [Figure 4.1](#) is very comprehensive with a total of 26 parameters. It is modelled in the form of different shells or layers for two reasons. Firstly, the large number of parameters should not deter people from tackling the task. An institution does not have an information budget only when the last parameter listed here has been recorded. Rather, an information budget can also begin with partial aspects, particularly with the parameters at the core. Secondly, it is structured based on the (presumed) possibilities and requirements from the perspective of German institutions.

- The core (dark blue) contains parameters required for the DFG funding programme Open Access Publication Funding [14] as well as other cost categories related to books and journals. This core is of utmost importance for the transformation process.
- The first shell (blue) contains all other acquisition costs.
- The second shell (light blue) includes other cost categories including staff expenses, as well as the costs for the library catalogue and research data management.

In the process, not only sum values should be recorded, but also each cost category for each publisher. If this is not already the case or can easily be facilitated, the costs have to be allocated to the publishers in the same proportion as the costs for the differentiated cost categories (cf. [section 4.3](#)). Although neither the German Council of Science and Humanities nor the Priority Initiative explicitly call for publisher-specific data collection, it is essential to achieve the goal of cost reduction. The DFG programme Open Access Publication Funding [14] calls for this differentiation by publisher “where possible”.

Not only the allocation to the three areas, but also the partial or complete (non-) inclusion of a cost category in the information budget is undoubtedly debatable. The deciding factors were the questions:

1. Does the cost category enable the production or dissemination of a publication?

There are grey areas here, e. g. translations. If a scientific publication is translated or proofread by an internal or external language service before submission, then these costs are taken into account. However, if this work is carried out by the authors or their colleagues, the costs are not taken into account. According to the wording, the question would also cover the costs of the research itself, but this is of course not purposeful and therefore not done.

2. Does the cost category enable the purchase or provision of media?

The costs of providing the literature, e. g. the costs of the reading room, could also be included. However, this was dispensed with.

3. Does the cost category support open access?

This criterion was included in order to account for expenditure for Diamond open access that does not directly benefit publications by your own institution.

Cost categories are then included in [Figure 4.1](#) when at least one of these questions can be answered in the affirmative.

4.2.2.1 Notes on individual facets

Core: Books and journals

- Books, Journals, Standards and Loose-leaf include both printed and electronic editions, individual purchases, as well as packages, temporary licences, and permanent purchases.
- Full-text databases are aggregated databases that contain full texts of books and/or journals and thus replace them. Other databases are included in the first shell.
- Transformative agreements combine aspects of reading and writing and therefore form a category of their own. This can also include Subscribe2Open.
- Publication fees are differentiated into DEAL post-payments, Gold OA APCs, Hybrid OA APCs, and Other publication expenditure. The latter includes, for example, colour charges, cover charges, page charges, submission fees, printing cost subsidies, and permissions (e. g. Copyright Clearance Centre). DEAL post-payments are separate from transformative agreements because they only contain a publication component.
- Document delivery includes the costs of receiving interlibrary loan, document delivery, and pay-per-view.
- Diamond OA internal is the expenditure for the university's own publishing house etc.; Diamond OA external is the cost of co-funding Diamond OA that is practised at other institutions.

First shell: Other media

- Bibliographic databases mainly contain references to other (full-text) sources, e. g. Dimensions, Scopus, Web of Science. Source databases, such as

SciFinder mainly contain independent content, but no journals or books (these are in full-text databases at the core).

- Bookbinding includes both the expenditure for externally contracted bookbinding work and the expenditure for any in-house bookbinding.
- Other acquisition expenditure includes, for example, AV media, newspapers, and media treated as consumables.

Second shell: Other expenditure

- Green OA internal includes expenditure that make Green OA in one's own institution possible, e. g. costs of an institutional repository. Green OA external includes payments for Green OA at other institutions, e. g. for arXiv.
- Reference management is the cost of commercial reference management software.
- Staff expenses refer to the personnel costs for all persons directly involved in the aforementioned tasks, if necessary on a *pro rata* basis if they also carry out other activities. Library staff with overlapping tasks (e. g. management, administration, ...) are taken into account by calculating the share of the first-mentioned persons in relation to all library staff.

4.2.3 The revenue side

Sources of funding include both the library and the faculties/divisions/institutes/-working groups etc., hereinafter referred to as institutes [86]. A distinction can be made between own resources and third-party funding, but also between the acquisition budget and the publication fund, although the extent to which the institutes actually plan these budget areas is unclear. Other budget items also play a role in the library's financial resources, but these are no longer differentiated and are all subsumed under Other budget sources. Thus, in a somewhat simplistic representation, a total of ten facets emerge (Table 4.1).

Of course, these sources only count as part of an information budget insofar as they serve to finance acquisition costs and publication fees and not, for example, the entire financial resources of the institutes.

Although it is in the library's own interest that funding sources from the institutes are maximized to save library funds, for the institutes, the opposite is

		Own resources	Third-party funding
Institutes	Acquisitions	Used in cases where third-party funding is unavailable and the library does not cover the costs. Generally, this is institute libraries' main source of funding.	Used when available and in cases where the library does not cover the costs. Often relates to material costs for literature in third-party projects.
	Publication fund	Used in cases where third-party funding is unavailable and the library does not cover the costs. Often involves Hybrid OA fees in the wild and publication charges for closed access publications.	Used when available and in cases where the library does not cover the costs. Often involves Hybrid OA fees in the wild and publication charges for closed access publications.
Libraries	Acquisitions	This is how the bulk of acquisition expenditure is financed.	Examples include specialist information services operated by the library and prepaid consortium licences for an entire consortium.
	Publication fund	The general rule for publication fees paid by the library.	Funding within the framework of the DFG Open Access Publication Funding programme is an example.
	Other budget sources	The general rule for financing expenditure from the second shell of the information budget model.	Third-party funding is used to finance expenditure from the second shell of the information budget model in particular, e. g. financing a library catalogue from consortia funds.

Table 4.1: Facets of funding sources.

true. The idea of the information budget is to overcome these perceptions and look at the overall picture of relevant expenditure and its sources of funding. In addition to the naturally obvious goal of both library and institutes acquiring more third-party funding, the goal must be to fully utilize existing third-party funding from institutes and not let it lapse. However, distribution struggles can exist not only between library and institutes, but also within the library if publication funding and acquisition budgets are two strictly separate entities.

4.3 Forschungszentrum Jülich's workshop report

The Central Library of Forschungszentrum Jülich began detailed cost monitoring at an early stage, the nucleus of which was an ERM system developed in-house [87]. Since 2016, all forms of expenditure for journals have been recorded and published in the OA Barometer [88]. An information budget has thus been realized for this sub-sector. In Table 4.2, the parameters from Figure 4.1 are shown as a proportion of the expenditure for Jülich as a whole in 2021. This also shows where expenditure already occurs at publisher level, where this is the aim, and where a permanent distribution to publishers is made according to the shares in the other positions.

	Share 2021	Comment	Publisher level
Core: Books and journals			
Books	5.14 %		Desideratum
BPCs	0.00 %	Not applicable	✓
Full-text databases	0.00 %	Not applicable	Pro rata
Journals	8.74 %		✓
Transitive agreements	10.59 %		✓
DEAL post-payments	3.31 %	Payment for 2021 in 2022	✓
Gold OA APCs	12.77 %		✓
Hybrid APCs	6.26 %	Decentralized costs ⁴	✓
Document Delivery	1.60 %		Desideratum
Diamond OA internal	0.05 %		✓
Diamond OA external	0.05 %		✓
Other publication expenditure	2.16 %	Decentralized costs	
First shell: Other media			
Bibliographic databases	6.52 %		✓
Source database	5.93 %		✓
Loose-leaf	0.16 %		Desideratum
Standards	0.59 %		Desideratum
Bookbinding	0.04 %		Pro rata
Other acquisition expenditure	0.61 %		Desideratum
Second shell: Other expenditure			
Green OA internal	0.00 %		Pro rata
Green OA external	0.41 %		Pro rata

⁴Expenditure in the cost categories Hybrid APCs and Other publication expenditure is processed by the Central Library, but is charged to the client's cost centre. Coverage is not complete, but is estimated at over 95%.

	Share 2021	Comment	Publisher level
Translations	0.78 %		Pro rata
Reference management	0.35 %		✓
Research data management	0.08 %		Pro rata
Library catalogue	0.40 %		✓
Staff expenses	33.18 %	47% of the library's staff expenses were included	Pro rata
Other expenditure	0.30 %	Plagiarism software; scanner maintenance; SFX; EZB fee	Pro rata

Table 4.2: Distribution of Forschungszentrum Jülich's expenditure across the cost categories of the information budget. The column Publisher level refers to issues that can be assigned to a specific publisher/provider. The ticks ✓ indicate that the relevant information is available. Desideratum means that the expenditure is known as a sum total but is not currently resolved at publisher level. This will be implemented in 2023. Pro rata means that the total costs are not permanently levied at publisher level, but are allocated to the publishers on a pro rata basis in the same proportion as the other cost categories are distributed among the publishers.

Figure 4.2 is a graphical representation of the expenditure of Forschungszentrum Jülich within the framework of the information budget. The largest single item is staff expenses, followed by Gold OA APCs. These are the dominant types of expenditure in the core area of the information budget, followed by transformative agreements. Classic subscription fees only follow in fourth place at Forschungszentrum Jülich. Hybrid OA APCs in the wild, which have to be paid by the authors' institutes, account for a remarkably high proportion. From this, it can be concluded that there is a high intrinsic motivation for open access publications.

The expenditure categories that were not recognizable in Figure 4.2 (share < 1 %) are shown enlarged in Figure 4.3. It should be noted that the expenditure for Diamond OA is very low internally, because this analysis only accounts for the expenditure for external hosting and does not account for staff expenses. Not shown are Green OA internal, BPCs and full-text databases, all of which account for 0 %. For Green OA internal, this is the effect of the separately presented staff expenses. BPCs and expenses for full-text databases were indeed not incurred.

A good 84 % of Forschungszentrum Jülich's information budget in 2021 (Figure 4.4) comes from the library's own resources. A total of 15.4 % was funded by the institutes; the largest share of this was publication fees financed through

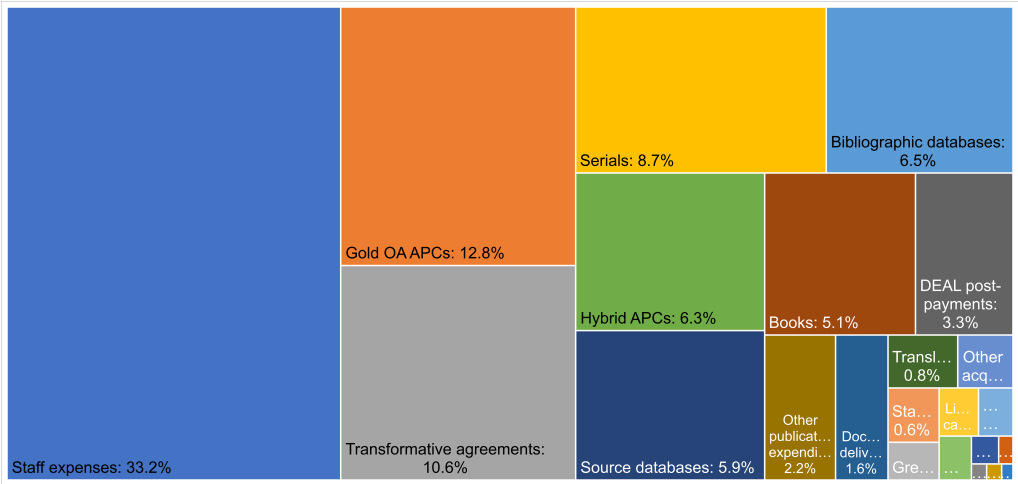


Figure 4.2: Expenditure of Forschungszentrum Jülich within the framework of the information budget.

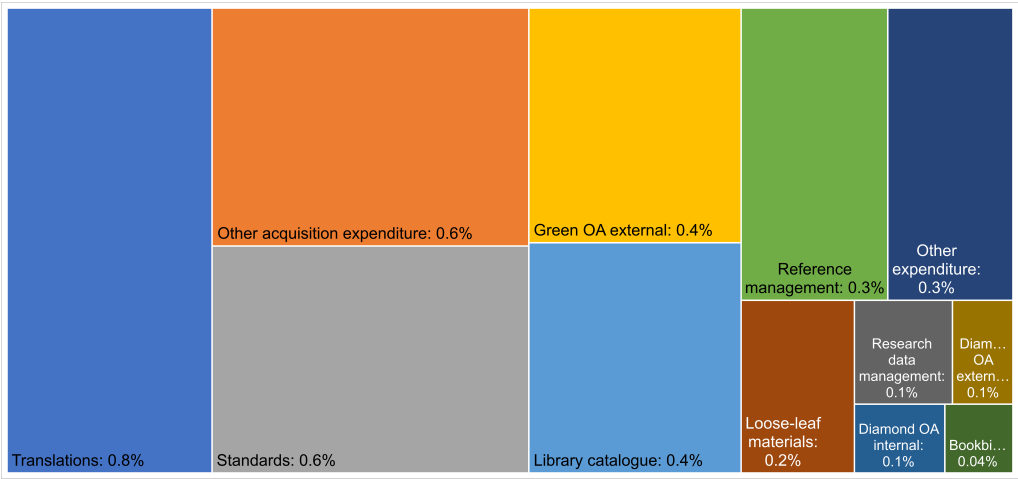


Figure 4.3: Expenditure of Forschungszentrum Jülich within the information budget with a share of less than 1 %.

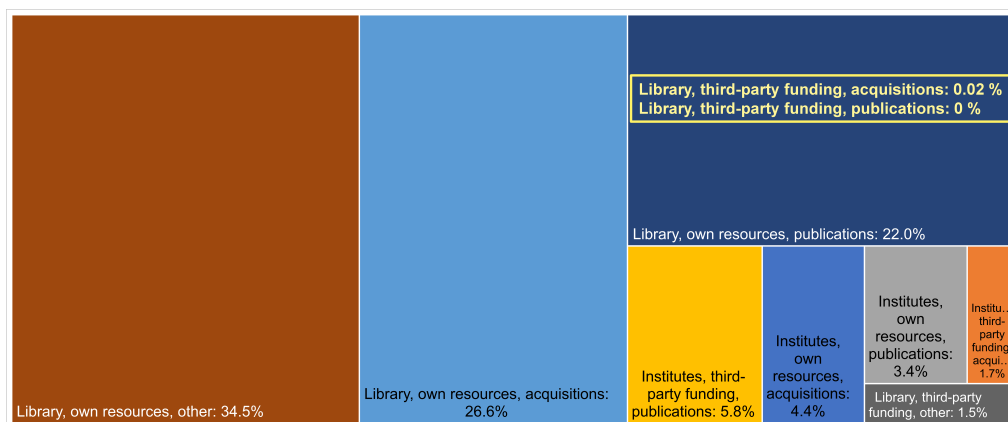


Figure 4.4: Sources of funding for Forschungszentrum Jülich's information budget in 2021.

third-party funding (5.8 %). The largest part of the institutes' expenditure (13.4 %) was handled by the Central Library; the library only became aware of 2.0 % of the information budget expenditure (corresponding to 3.2 % of the acquisition costs and publication fees in the narrower sense) in the course of searches in the SAP accounting software.

At the Central Library, third-party funding only plays a minor role in the information budget, in the form of overhead funding within a DFG-funded transformative agreement (acquisition) and an NFDI4Ing-funded position in research data management. Third-party funding will only become relevant in publication expenditure from 2022 onwards (DFG programme Open Access Publication Funding).

The ten segments of [Figure 4.4](#) are grouped in [Figure 4.5](#) in such a way that the proportions of those responsible for financing, the sources, and the budgets can be seen.

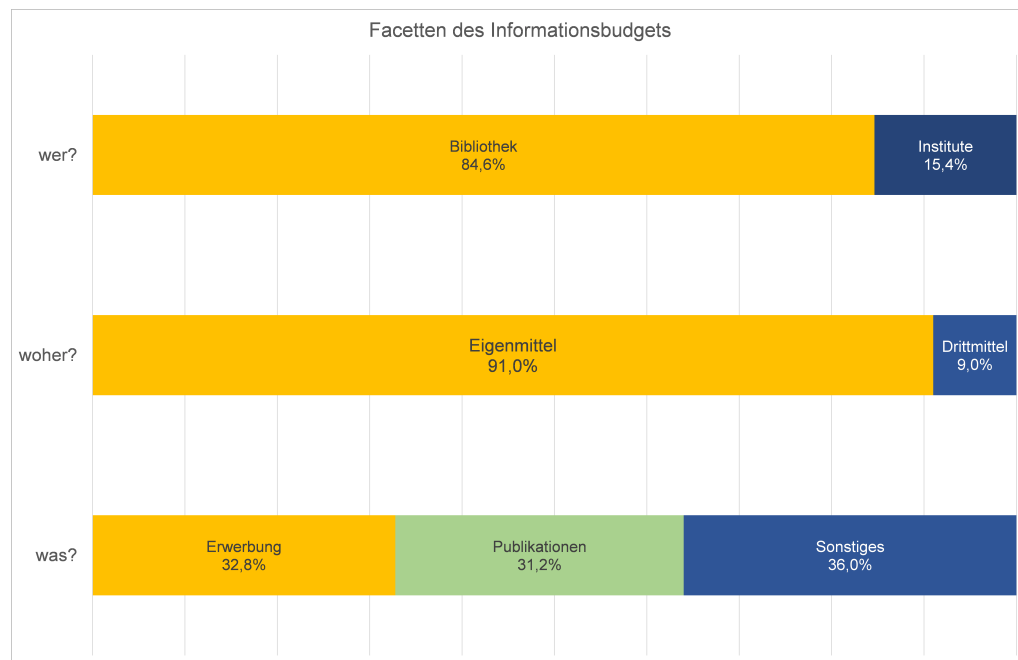


Figure 4.5: Facets of the Forschungszentrum Jülich’s information budget for 2021. Transformative agreements were divided into acquisition and publication according to the publisher’s details (e. g. by VAT rate).

4.4 Discussion

The preparation of an information budget (or more precisely: the aggregation of expenditures and their funding sources) is a challenging task. While all the figures are generally available in an *ex post* view, all of the necessary information related to the figures is often only available indirectly. Did the institute finance this book from its own resources (basic funds) or using third-party funding? Which publisher does this payment to the Copyright Clearance Center concern? What literature was acquired outside of the official procurement channels? These and similar questions are always asked when compiling the data corpus. Another problem is that staff expenses represent the largest item but they are probably the most imprecise to determine. Allocating them to the information budget is only easy if a person undoubtedly works entirely in this area. As soon as proportions have to be estimated, the calculation inevitably becomes imprecise. In addition, the approach of allocating categories of expenditure on a *pro rata* basis where this cannot be avoided has reached its limits in the case of staff expenses. This is particularly clear in the case of Green OA internal, where no costs were incurred⁵, which is why no staff expenses are charged. However, the real staff expenses for the repository comprise about three full-time positions.

Given 26 categories – distributed over three shells of 12, 6, and 8 categories – the expenditure side of the information budget is already very detailed, even if additional steps of detail are conceivable. However, it may also be too detailed for practical use; at Forschungszentrum Jülich, for example, 15 of the 26 categories account for less than 1 % of total expenditure. Should this very skewed distribution also occur in other institutions, a readjustment of the model would have to be considered, e. g. by combining some categories. In any case, it will be interesting to be able to look at the development over time after this point measurement concerning the year 2021 by repeating it in subsequent years.

On the revenue side, 12 categories result very stringently from, firstly, the differentiation between library and faculties/institutes, secondly, the differentiation between own resources and third-party funding, and thirdly, the differentiation between acquisition budget, publication budget, and other budget. However, faculties/institutes normally only have their own staff budget in two-tier library systems, which is the main part of Other. For Forschungszentrum Jülich, the categories Institute/Other/Own resources and Institute/Other/Third-party funding

⁵This is also not quite correct in itself because energy costs were not taken into account and server costs were not depreciated over their useful life.

are missing. This results in 10 categories and hence the equation in the title of this paper.

Finally, it should be emphasized that the concept was developed from a German perspective, cf. the category DEAL post-payments for example, which is only relevant in Germany. However, after minor adjustments, the ability to apply it to an international context is possible and desired.

4.5 Acknowledgements

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