Open Access publishing at the KTH Royal Institute of Technology

Statistics for 2011-2019

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Innehåll

1 Introduction

In this report, shares and trends of open access publishing at KTH are analysed starting from 2011, the year when a policy for scientific publishing at KTH was implemented.[1] The report is for anyone interested in how open access publishing at KTH has developed over the years. It can also be used as a basis for planning on how to proceed with the work on open access at KTH.

2 Definitions

Open access comes in different ways and in this section, we explain the definitions we use in this report, based on the definitions used by the online service Unpaywall[2].The concept of open access (OA) is based on the idea that results from publicly funded research should be accessible to all. This means that the results of such research should be published on the Internet in such a way that anyone can download and read it freely. The stricter definition of OA also includes the possibility to download, copy, distribute, print and use that material in any other way without infringing on the copyright of the author. In contrast, the traditional way to disseminate research findings has been to publish them in subscription-based, so-called toll-access journals to which only subscribers have access. Open access to research publications can be accomplished in two major ways, either by depositing the peer reviewed author manuscript of an article into a public repository (this is known as the “green road”) or by publishing an article in an open access journal that is without subscription barriers and free for all to read. If all the publications of the journal follow this publication scheme, the journal itself is said to be an open access journal. We distinguish articles published in an open access journal (the “golden road”) from articles published in a traditional subscription-based journal made openly available by paying a fee (the “hybrid road”). The fees paid are typically called article processing charges (APCs). Our analysis of open access distribution of KTH publications – taken from the institutional repository DiVA[3] – is based on the online service Unpaywall, a database of open access status for scientific publications with links to full-text articles. Unpaywall’s method to determine the type of open access of a given publication consists in finding locations where the publication is freely available among legitimate open-access sources all over the world and then determining the “best” location (gold or hybrid being considered as “better” than green, i.e., if both gold and green are available, then Unpaywall will regard the publication as gold OA). In case no location can be found, the publication is considered to be “closed”.

It is important to note that since this method is empirical, the open access status of a given publication can change over time, e.g., a closed publication turns green as a full-text is being added to an institutional repository. An additional category defined by Unpaywall is “bronze”, meaning papers made free to read by the publisher, but without a specific license to reuse the paper. We do not consider bronze OA as a reliable category, since the absence of a correct license reveals a lack of proper open access framework. Therefore, we chose to aggregate the different OA categories provided by Unpaywall as “Total OA” (gold, hybrid, green) and “Not OA” (bronze, closed)

3 Results

In this section we present results and statistics for KTH OA-publishing. Note that there are multiple time frames used in this section, since there are differences in what data that are available, and since there was a major change in the organisation structure for KTH in 2018.

[1] KTH:s policy för vetenskaplig publicering, Dnr V-2010-0482, UF 0243, due 2011.

[2] http://unpaywall.org/welcome

[3] https://kth.diva-portal.org/

3.1 Doctoral and licentiate theses presented at KTH 2011-2019

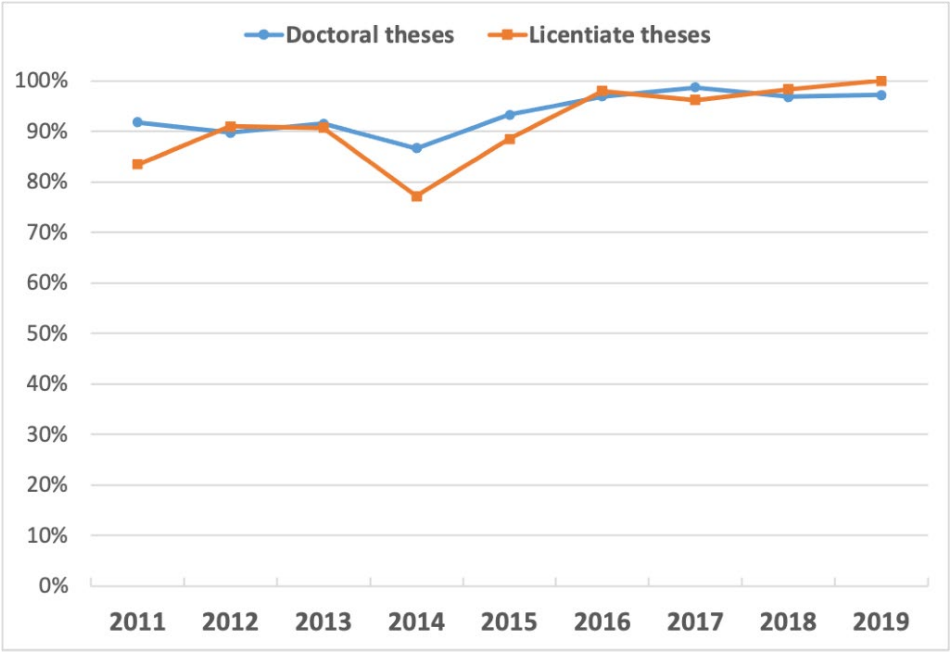


Figure 1 Share of KTH theses in Open Access

The current publishing policy states that everything published by KTH, such as theses and reports, should be open access in DiVA. Hence, we should in principle see close to 100 % of all theses being OA.

Already when the current policy on scientific publishing was implemented, KTH had a policy on OA to all doctoral theses. This explains the rather high rate of OA published theses from the beginning of the period. In 2011 there was also an information drive to implement the new policy. Hence the rate of OA theses was rather high. As can be seen there was a dip around 2014. The explanation for this was probably that the knowledge about the policy was lost again. Therefore, KTH library executed another information drive specifically directed to doctoral and licentiate theses. This may explain the rise again towards now very close to 100 %. Actually, licentiate theses reached a 100 % in 2019. The relative lack of full-texts from 2019 can be attributed to embargo periods used by some parts of the CBH-school. This could probably be shown if we had a more school-specific investigation. But since the overall share of OA when it comes to licentiate and doctoral theses are so close to 100 %, we find it not so urgent to look at the specific schools.

3.2 Journal publishing by KTH researchers 2011-2019

We would first like to point out that there have been many global changes in the OA publishing landscape in the time frame. New OA-journals have been started. Many publishers have flipped some of their journals, meaning that they go from being subscription-funded to APC-funded. There have also been some researcher-led initiatives to promote OA publishing. One of the bolder moves is when the editorial board of a journal resigns, in order to move to another, freshly started, OA-journal.[4] We have also seen some local changes, in particular in 2018-2019, where national Swedish and local KTH Read and Publish agreements have been negotiated and signed. This, in combination with the KTH Library starting to administer and pay for individual APC-invoices, (from 2019) can be viewed as a positive effect on the tendency to have KTH articles available OA. Hence, we divide our results into two subsections to reflect on the effects of these changes.

[4] For example, see the case Journal of Infometrics versus Quantitative Science Studies.

3.2.1 Share of OA in journal publishing 2011-2019

In this section we describe the long-term trend on OA journal publishing at KTH 2011-2019.

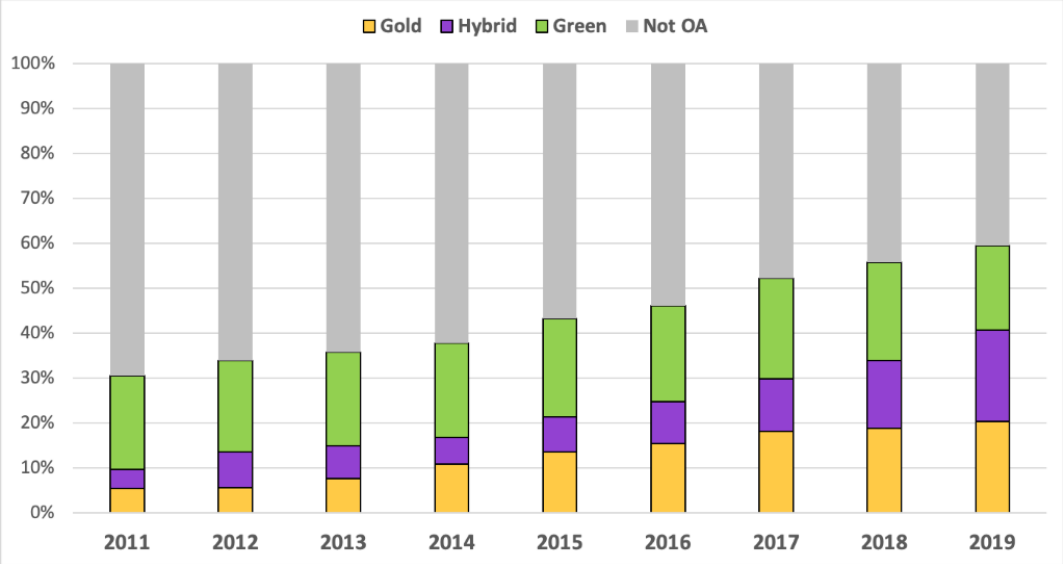


Figure 2 Share of OA types by year for KTH journal articles

We can observe an overall increase of the share of OA publishing, more than doubling (from 30 % to 63 %) between 2011 and 2019. This increase is mainly due to an irregular but on the whole large increase in both gold and hybrid OA publishing, their combined share increase between 2011 and 2019 amounting to over 40 %. The share of green OA on the other hand, can be seen to have been rather stable (circa 20 %) during the period with the exception of a lower share in 2019 that could be explained by a latency in the process of publishing articles on institutional repositories due to, e.g., journal embargo.

3.2.2 Share of OA in journal publishing 2018-2019

We present our results for each of the five KTH-schools that were formed during the change in organisation structure, in January 2018.

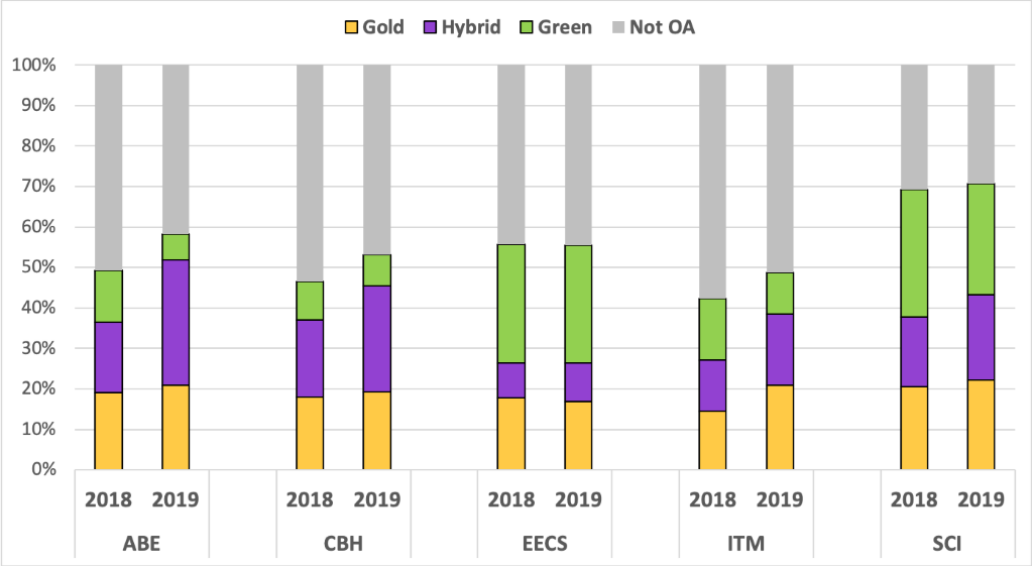


Figure 3 Share of OA types for journal articles at KTH schools

There can be seen some differences between KTH-schools. For example, we can see that CBH and ABE tend to have more hybrid OA than other schools, whereas EECS, by their tradition in research areas have more options to do green OA, continues to do so. At the school of ITM the options of publishing OA is more restricted hence the lower OA rate.

3.3 Conferences published OA by KTH researchers 2011-2019

As for the journal publishing results in Section 3.2, we divide the results into two subsections. Since the OA type definition is primarily applicable to journal articles, the data for conference proceedings is relatively uncertain. We can observe that the majority of OA conference publications are classified as green by Unpaywall, yet there are also some that are shown as gold or hybrid. Independently of Unpaywall's definition, there is a long tradition on following the green OA publishing process –i.e., publishing the full text in an institutional repository – for conference papers (probably more than for journal articles). Researchers in some areas, e.g., in computer science, prefer to make the paper freely online in advance of the conference, so that people may read and contribute to the discussion during the conference. The fact remains that the procedure regarding conference publishing may differ a lot between research areas.For these reasons, we chose not to distinguish the different types of OA for conference proceedings but rather to examine the total OA proportion.

3.3.1 OA conference publishing 2011-2019

In this section we describe the long-term trend on OA conference publishing at KTH 2011-2019.

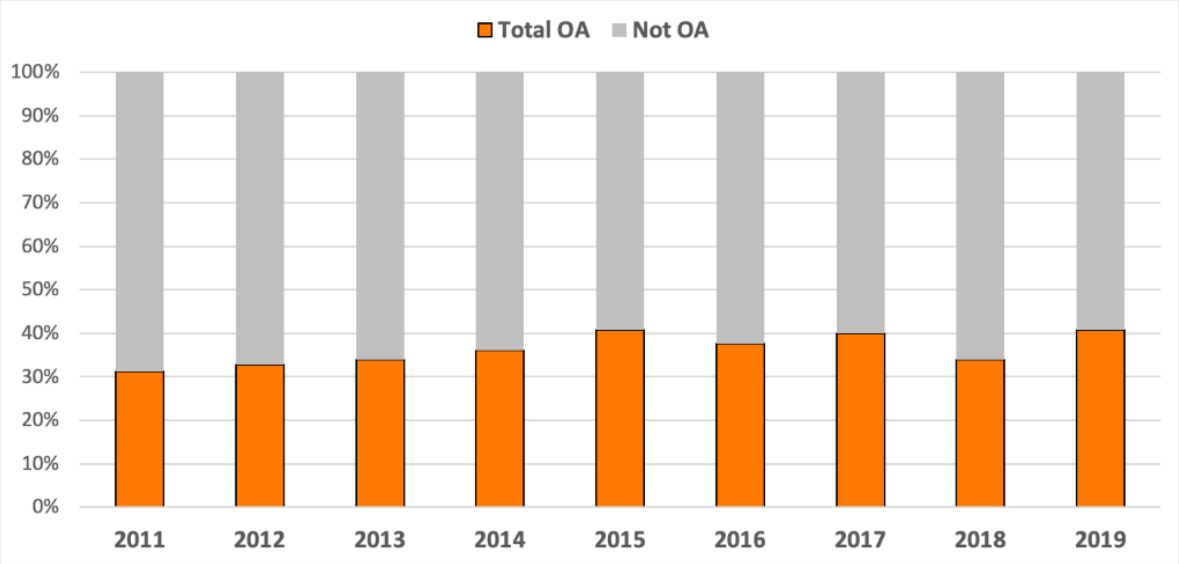
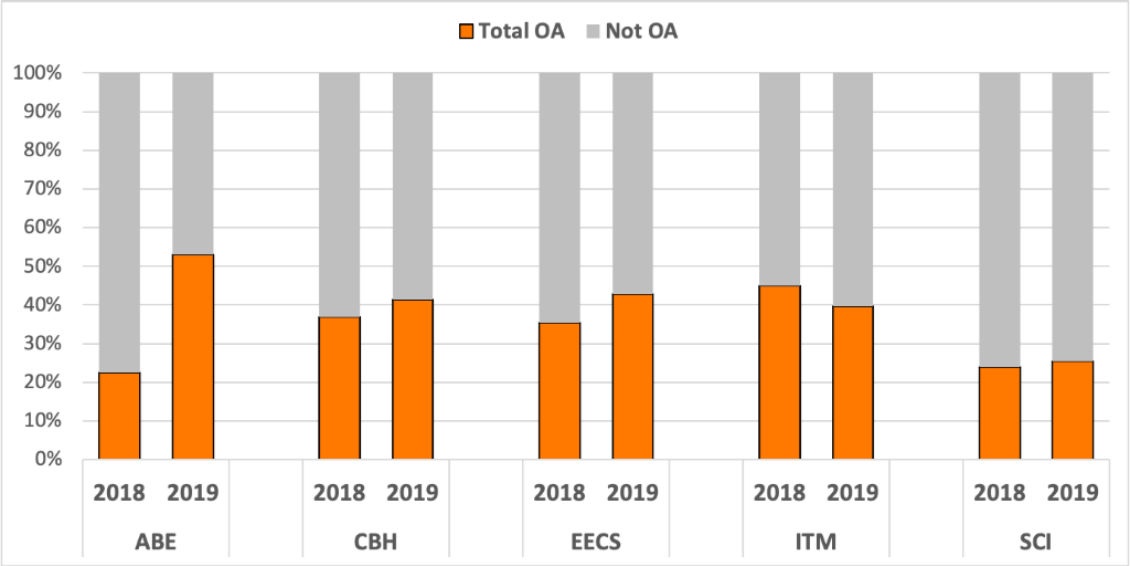


Figure 4 Share of OA conference proceedings by year at KTH

We find that the total OA share of conference proceedings fluctuates between 30 % and 40 % with a slight increasing trend, albeit irregular.

3.3.2 Conference publishing 2018-2019

In this section we describe the short-term trend on OA conference publishing at KTH 2018-2019.



We find diverse short-term trends for KTH schools in OA publishing for conferences, a large increase (ABE), a slight increase (CBH, EECS, SCI), and a slight decrease (ITM).

3.4 Venues

In this section we present the publication venues frequently used by KTH researchers the year 2019. We present the results for each KTH-school, since some few schools are dominant when it comes to journal publishing, and the result would be misleading if we presented only for KTH in total.

3.4.1 Top journals at the ABE-school

The top journals for publishing at the ABE-school in 2019 are shown in table 1.

Table 1. Top 10 journals for publishing at the ABE-school in 2019.

RANK	JOURNAL NAME	ISSN	NUMBER OF ARTICLES	OA JOURNAL
1.	Sustainability	2071-1050	18	Yes
2.	Journal of Cleaner Production	0959-6526	14	No
3.	Road Materials and Pavement Design	1468-0629	9	No
4.	Groundwater for Sustainable Development	2352-801X	8	No
5.	Water	2073-4441	7	Yes
6.	Energy Policy	0301-4215	5	No
7.	Construction and Building Materials	0950-0618	5	No
8.	Science of The Total Environment	0048-9697	5	No
9.	The International Journal of Life Cycle Assessment	0948-3349	5	No
10.	Nordic Concrete Research	0800-6377	4	No

The journal Sustainability which is the one with most published articles, is an OA journal. Otherwise most are subscription based journals, except for one more, Water, which is also an OA journal. However, all the others have the option of making one specific article OA, that is, they are what is called hybrid journals.

3.4.2 Top journals at the CBH-school

In this section we present the top journals for publishing at the CBH-school during 2019.

Table 2. Top 10 journals for publishing at the CBH-school in 2019.

RANK	JOURNAL NAME	ISSN	NUMBER OF ARTICLES	OA JOURNAL
1.	Scientific Reports	2045-2322	22	Yes
2.	Biomacromolecules	1525-7797	20	No
3.	ACS Sustainable Chemistry & Engineering	2168-0485	15	No
4.	Physical Chemistry Chemical Physics - PCCP	1463-9076	12	No
5.	ACS Applied Materials & Interfaces	1944-8244	12	No
6.	Cellulose	0969-0239	12	No
7.	The Journal of Physical Chemistry C	1932-7447	11	No
8.	Applied Energy	0306-2619	10	No
9.	Nanoscale	2040-3364	9	No
10.	Journal of The Electrochemical Society	0013-4651	9	No

The dominating venues for publishing at CBH-school are subscription-based journals except from the top one, Scientific Reports, which is an OA journal. However, most of the others are hybrid journals and as can be seen in chapter 3.2.1 CBH-school together with ABE-school, has the biggest share of hybrid OA.

3.4.3 Top journals at the EECS-school

In this section we present the top journals for publishing at the EECS-school 2019.

Table 3. Top 10 journals for publishing at the EECS-school in 2019

RANK	JOURNAL NAME	ISSN	NUMBER OF ARTICLES	OA JOURNAL
1.	Nuclear Fusion	0029-5515	42	No
2.	Nuclear Materials and Energy	2352-1791	20	Yes
3.	IEEE Access	2169-3536	19	Yes
4.	Automatica	0005-1098	18	No
5.	IEEE Transactions on Automatic Control	0018-9286	18	No
6.	Journal of Geophysical Research: Space Physics	2169-9380	16	No
7.	Geophysical Research Letters	0094-8276	13	No
8.	Plasma Physics and Controlled Fusion	0741-3335	13	No
9.	Fusion Engineering and Design	0920-3796	6	No
10.	IEEE Control Systems Letters	2475-1456	6	No

At EECS the IEEE journals are dominating. Only three of the journals in the list are OA, but generally green OA is more common at EECS than at other schools, due to the general option of this form of OA

at these publishing venues. IEEE is also offering authors to do immediate green OA with author's manuscript.

3.4.4 Top journals at the ITM-school

In this section we present the top journals for publishing at the ITM-school 2019.

Table 4. Top 10 journals for publishing at the ITM-school in 2019

RANK	JOURNAL NAME	ISSN	NUMBER OF ARTICLES	OA JOURNAL
1.	Metals	2075-4701	12	Yes
2.	Sustainability	2071-1050	10	Yes
3.	Scripta Materialia	1359-6462	9	No
4.	Physical Review B	2469-9950	8	No
5.	Energy	0360-5442	8	No
6.	Acta Materialia	1359-6454	8	No
7.	Energies	1996-1073	8	Yes
8.	Journal of Cleaner Production	0959-6526	8	No
9.	SAE Technical Paper Series	0148-7191	7	No
10.	Journal of Materials Science	0022-2461	6	No

Also at the ITM-school publishing in subscription-based journals are the most common, even if the two at the top of the list are actually open access journals.

3.4.5 Top journals at the SCI-school

In this section we present the top journals for publishing at the SCI-school 2019.

Table 5. Top 10 journals for publishing at the SCI-school in 2019.

RANK	JOURNAL NAME	ISSN	NUMBER OF ARTICLES	OA JOURNAL
1.	The European Physical Journal C	1434-6044	31	Yes
2.	Journal of High Energy Physics	1029-8479	27	Yes
3.	Nuclear Fusion	0029-5515	25	No
4.	Physical Review B	2469-9950	24	No
5.	Physics Letters B	0370-2693	22	Yes
6.	Journal of Fluid Mechanics	0022-1120	19	No
7.	Physical Review Letters	0031-9007	18	No
8.	Physical Review D	2470-0010	18	No
9.	Scientific Reports	2045-2322	16	Yes
10.	Nuclear Materials and Energy	2352-1791	14	Yes

We can see here that SCI-school is the school with more OA-journals than the other schools. This can be explained by the physics subjects that tend to publish OA, and especially the publishing made within the SCOAP3-agreement[5].

3.5 Costs paid by KTH in article processing charges 2018-2019

In 2018 KTH decided to give the five schools 500 000 SEK each for covering the cost for APCs. Before that year, the cost for APCs were not accounted for in any separate account. Therefore, it's not possible to calculate how much was paid for OA before that date. In 2019 the KTH library started the first Read and Publish deals and also started to pay for specific APCs from KTH researchers.

Table 6. Publishing costs per school 2018-2019 (in SEK).

	2018	2019
ABE	182 692	770 898
CBH	2 003 320	677 746
EECS	915 794	308 825
ITM	264 435	2 010 269
SCI	476 930	332 155
KTHB	0	723 047
TOTAL KTH	3 843 171	4 822 940

In total there is an increase in APC costs, of 1 million SEK from 2018 to 2019. This may be due to an overall better marketing about the options of OA at KTH among researchers. What is notable here is that ABE- and ITM-schools paid a lot more for APCs in 2019 than in 2018, probably due to the information that the school got 500 000 SEK for this purpose. What is also notable is that CBH and EECS paid a lot less on the other hand. This is probably because the library took a great deal of the cost for 2019. Probably the costs for OA will increase even further in the coming years, since the strive is for total OA and as can be seen in table 2, KTH has reached only 60 % OA so far. For a more detailed analysis concerning the cost of open access see at KTH see Ahlström, Hamrin, Hinders and Wändahl, *OA kostnadsanalys huvudrapport*, 2020.

4 Concluding remarks

What trends can be seen from our data? Firstly, it is clear that there is an increasing share of KTH research published OA in some form. When it comes to conference papers, we don't distinguish between gold or green OA and the tendency to publish OA at conferences seems rather stable through the years. But when it comes to journal publishing, it is clear that the share of OA has increased significantly, and in recent years it is the hybrid form that has increased mostly. This may be due to the willingness from KTH to pay for authors APCs, and also due to funders mandatory policies when it comes to OA. Clearly, we are in a transformative stage. There are signs that any administrative actions that are being made may have an impact on the share of OA publishing, like for example the information drive towards doctoral theses, or the library decision to pay for all APCs.

Secondly, the popular venues for publication are stable and mostly subscription-based although, as just pointed out, the hybrid form of OA is increasing, and the traditional journals generally offer a hybrid option.

5 https://scoap3.org/

Thirdly, the KTH publishing policy has had impact on the full-text availability for theses[6] and the repeated information that are given to doctoral students and administrators handling theses, have given obvious results. Fourthly, we can also observe that the newly signed OA-agreements for KTH, together with the recent KTH Library policy to pay for all APCs for papers with corresponding authors employed at KTH, have significantly increased the OA-publishing for these papers, and that this has come with a total increase in publishing costs.

[6] An observation beside the data included in this report is that this hold for all types of theses (including student theses).