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**EVALUATION OF THE NORWEGIAN
PUBLICATION INDICATOR
ENGLISH SUMMARY**

**DANISH CENTRE FOR STUDIES IN RESEARCH AND RESEARCH
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Evaluation of the Norwegian Publication Indicator – English Summary

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English Summary

Background and objectives of the evaluation

The Norwegian Publication Indicator is a system for documenting Norwegian academic publishing with the aim of measuring publication activity and allocating research funding according to the publishing performance. The Indicator is used to distribute approximately 2 percent of the total funds for the University and University College sector and thus constitutes a very small part of the total funding for this sector.

With the introduction of the Publication Indicator, Norway became part of an international development in which the allocation of basic funds is increasingly linked to performance indicators. The evaluation of the Norwegian Publication Indicator represents an interesting case for a number of reasons. First, the Indicator is a universal model with the same indicators for all disciplines, which at the time of its introduction was unique in an international perspective. Second, the Indicator has remained relatively unchanged since 2004, which greatly facilitates the evaluation of its effects. Third, an evaluation of the Norwegian case is interesting because a number of other countries have been greatly inspired by the Norwegian model. Finally, and most importantly in this context, the model has been greatly debated in Norway, both regarding its ability to achieve intended objectives and potential unintended consequences.

The Danish Centre for Studies in Research and Research Policy, Aarhus University, was commissioned by the Norwegian Association of Higher Education Institutions (Universitets- og høøgskolerådet, UHR) to conduct an evaluation of the Norwegian Publication Indicator. The mandate for the evaluation was the following:

“The main purpose of the evaluation is to examine whether the objective of the Publication Indicator has been met: has the Indicator stimulated more research, and research of higher quality?”

The evaluation includes evaluating the Indicator's impact on publishing patterns and research. It also includes the assessment of the properties of the Indicator - whether it is neutral across disciplines and whether the use of two levels maintains the quality dimension. The disciplinary and administrative organization of the Indicator should be examined, along with intentional and unintentional use of the indicator for purposes other than the budgetary allocation of funds between institutions. The evaluation should have a forward-looking perspective in terms of how the Publication Indicator can be developed further. The following questions should be addressed in the evaluation:

Effects of the Indicator - the Indicator's impact on publishing patterns, including: the quantity of publication; whether the quality intention is safeguarded; indicator transparency; Norwegian language publishing, and length of articles and monographs. Impact on research, including: the organization and attention given to research, and risk-taking in research.

Features of the Indicator - whether the publication levels serve as a satisfactory quality indicator, whether it is neutral across disciplines, reporting of books after 2010, and similarities / differences with other countries' publishing indicators.

Organization of the Indicator - the disciplinary and administrative organization of the Publishing Indicator.

Use of the Indicator - use of the Publication Indicator for purposes other than the distribution of budgetary funding, including: the use of the Indicator at the faculty, department, group and individual levels, and the use of the Indicator in recruitment, assessment of staff qualifications and salary negotiations."

The Indicator was developed by UHR in 2003-2004 and is described in detail in the publication *Vekt på Forskning* (UHR, 2004). It describes the purpose of the Indicator as follows: *"The Ministry's objective for this project has been to develop a qualitatively better, more reliable system of documenting academic publishing that will serve as the basis for the research component of the budgets for universities and university colleges. The purpose is to create a performance-based funding model for research and to encourage more research activity at universities and university colleges. The documentation system must also be flexible so that it can be used for other reporting needs and in individual and institutional publication lists, applications, project reports and evaluations, annual reports and information for the public at large."* (UHR, 2004, p. 17). The indicator was first used to distribute funds to universities and colleges in 2006, and in 2008 the system was expanded with a common database and classification system for the university and university college sector, healthcare organizations and the institute sector (Sivertsen, 2008).

In order to avoid perverse incentives for researchers to produce more articles with lower quality, and to promote publication in channels with high impact, publication channels are classified in two levels. Level 1 includes all the channels that can be described as "scientific" or "academic". Level 2 channels are the most important channels within each subject area and constitute at most 20 percent of a subject area's total scientific publications. The Indicator's point system is weighted in terms of both level and publication form (journal articles, articles in anthologies and monographs). For example, a level 1 journal article yields one point, while a level 2 article yields three points.

Publication points for individual authors are fractioned according to the number of authors (eg. for a level 1 journal article with four authors, each author contribution counts 0.25 points). Classification of publication channels is determined through a nomination process where both institutions and individual researchers may nominate channels. These proposals are then discussed in the appropriate committee for the subject area and approved (or rejected) by UHR's publishing committee.

The Indicator itself is only designed for use at an aggregated level. Thus, it was stressed that the Indicator is not an appropriate measure of research performance of individual researchers: *"A division of publishing channels in quality levels cannot replace or simulate qualitative assessments of publications at the individual level, just as a funding model cannot replace evaluations and strategies for research at the institutions. Publications of high quality are sometimes published in less reputable channels or vice versa. The channel cannot be used to draw conclusions about the individual publication or individual researchers, nor is this its purpose."* (UHR, 2004, p. 35)

About the evaluation

The overall evaluation is based on five sub-analyses:

- Survey conducted among researchers in the university and university college sector

- Survey conducted among rectors, deans and heads of departments in the university and university college sector
- Bibliometric analysis of the impact of the Publication Indicator and its properties
- Case-/interview-/document study of selected universities and university colleges
- Examination of the Norwegian Publication Indicator in an international context

There are strengths and limitations for each of the above methods and it has therefore been important to base the analysis of evaluation questions on several different approaches, so that the qualitative interviews, the survey -based data collection and quantitative bibliometric analysis support each other to the greatest extent. The individual sub-analyses are described briefly here and in more detail in the methodology section at the end of this report.

The survey of researchers in the university and university college sector seeks to examine the effect of the Indicator on both the publishing patterns and research. These includes researchers' understanding of the Indicator's effects, its characteristics, purpose and use, as well as how the Indicator is used at individual, group and departmental levels. The target population includes all academic staff (including PhD students) currently employed at Norwegian universities and university colleges. The questionnaire was sent out to a sample of nearly 10,000 researchers, with a response rate of 34.4 percent. The results have been grossed up (by institution and position) to the overall population.

The purpose of the survey among managers is to examine how the Indicator is used at different levels of institutions. The population includes faculty and department heads at universities and rectors and faculty heads at university colleges. The response rate for the survey study among managers was 58.1 percent. The final sample consists of 219 managers, including 27 rectors, 31 deans and 161 department heads.

The bibliometric analysis examines the effects of the Indicator at the macro level. Publication analyses examine the extent to which the Publication Indicator has led to increases in publication activity, and eventual changes in publication patterns and general publishing behavior. The citation analysis examines the extent to which the Indicator may have affected the impact of Norwegian international journal publications. The bibliometric analysis is supplemented by economic data and survey data, which together are used to examine whether the Norwegian Publication Indicator had the same negative impact on the research system as was the case with a similar indicator in Australia in the early 1990s.

Qualitative case studies were also conducted of selected institutions at institutional, faculty and departmental levels. The purpose of these case studies has been to provide a more detailed description of the various units' internal use of the Indicator than the surveys alone could provide. The case studies consist of a combination of interviews and desk research, covering four institutions, including selected faculties and departments, which were chosen to ensure maximum breadth across types of institutions and disciplines. The interviews had a primary focus on the issues of organization and attention to research, as well as questions about other uses of the Indicator than distribution of funds between institutions.

Main results and conclusions

The following presents the main results and conclusions based on the analyses in this report. The main results from each of the report's chapters are highlighted first individually, followed by a discussion of the evaluation's general conclusions. Thereafter the implications of the evaluation findings are discussed and a number of issues are identified that require future attention.

The Publication Indicator in an international perspective

In Chapter 2 the context for the rest of the evaluation is set by examining the Norwegian Publication Indicator in terms of broader international developments. A main conclusion of the chapter is that there is no national model that appears to perform best in all respects. Each model is characterized by a number of trade-offs. The overall assessment of the construction of the Norwegian Publication Indicator is, however, that its objectives, coverage, and incentive structure are sensibly balanced, where its construction appears to be well grounded in the international literature.

However, this does not mean that the Indicator is without problems. As the chapter's review of strengths and weaknesses illustrates, there are a number of tradeoffs related to all model selections. In many cases, it may even be argued that the Indicator's greatest strengths have been its largest weaknesses. This is especially true of the Indicator's cross-cutting nature and the high degree of transparency in the allocation of publication points. This overall, international assessment identified a number of areas with important trade-offs in model selection. This particularly applies to the relationship between quantity and quality, point allocations for different types of publications, classifications according to level and neutrality of the model across subject areas, and potential use internally within institutions and in particular the dilemma associated with forming incentive structures. Precisely these issues have been central to the analyses in this evaluation.

Effects of the Publication Indicator

In Chapter 3, the focus is directed towards the Indicator's potential effects on publishing patterns and publishing behavior. In general, the analysis here finds strong increases in publication output, but almost no effect on other publishing parameters - either positively or negatively. Norwegian publication activity has increased greatly over the period from 2004 to present, both in terms of total number publications, publication points and in terms of journal articles in Web of Science (WoS). For example, total publication points have increased by 82 percent from 2004 to 2012, while the number of WoS publications has increased by 69 percent over the same period. The increase in WoS publications began, however, before the implementation of the Publication Indicator. At the same time, the period has also seen a sharp increase in resources for the Norwegian research system. This can certainly explain part but not all of the increase, since publication scores have rose significantly compared to resources.

The analysis of individual publication data shows that the relatively large increase in publication activity reflects both a large increase in the share of researchers with publication activity (where the number of publishing researchers has almost tripled during 2004-2012, compared to an increase in the total number of R & D staff of approximately 21 percent from 2005-2012), and a somewhat smaller increase in average publication activity among publishing researchers. The average number

of level 1 publications has increased by 20 percent while the average for level 2 publications has increased by 10 percent. Over the same period, the average number of publication points fell by 9 percent. It is important to note however, that these averages are based on researchers with at least one publication in a given year where, as mentioned above, the number of publishing researchers has increased almost three fold from 2004 to 2012. These results thus suggest that effects on output have been greatest in the bottom of the system where publication activity generally was low. It is also interesting that the average number of publications has increased while average points have fallen. The most likely reason behind this is an increase in collaboration, though changes related to publication level and types of publications can potentially also have a lesser role in this result.

As also mentioned in Chapter 3, it is also interesting to note that the increase has been relatively stable over the period and that there is therefore no indication that the output effect of the Publication Indicator has been declining, which might otherwise be expected. This trend is particularly notable in light of the fact that the monetary value of each publication point has actually fallen significantly over the period, which would imply that economic incentives have weakened considerably over time.

Large universities have experienced a decline in relative shares of the total publication points, resulting in a redistribution of some funding from large to smaller institutions. An obvious interpretation of this is that the publication indicator has had a lesser effect on research-intensive institutions, which already had considerable focus on publishing, and that the Indicator has therefore had a greater impact among less research intensive institutions. Based on the objectives of the Publication Indicator, it is unclear whether this should be regarded as an intended or unintended effect.

As mentioned above, little evidence has been found in this evaluation on the perverse effects on the quality of publications, though on the other hand, there are no indications of significant improvements. Both citation impact and journal publishing behavior has been fairly stable over the period, and though at a relatively low level in an international perspective. In terms of publishing behavior, no evidence was found that the indicator has led to 'salami publishing', nor is there any indication of a negative impact on national or international cooperation.

Finally, the chapter also looked at developments in both publication language and the balance between different publication types. In particular within the Humanities and Social Sciences, the data indicates a moderate shift away from Norwegian as a language of publication (though it should be noted that both Norwegian and other language publications have increased over the period in absolute terms). Also in relation to publication types, the overall development has been characterized by stability.

The properties of the Publication Indicator

Chapter 4 focuses on the properties of the Publication Indicator, in particular concerning the point system, the nomination process and classification of publication channels, and the indicator's neutrality across disciplines. These analyses suggest some possible problems under the seemingly stable macro trends. First, the analysis shows that there are widely varying opinions as to what is

viewed as the optimal number of levels, and secondly, that the classification of publication channels at different levels is seen by many as a complex, opaque and sometimes controversial process.

Compared to the number of levels, the results show that a large share of researchers argue for three levels as a more appropriate number than the current two, though this however appears to be based on two partly conflicting rationales. On one hand, many argue for the need for a third level in order to create an incentive to pursue the most prestigious publication channels. On the other hand, there are also many who argue for a lower level which will reward some of the types of publications that are not currently counted in the Indicator. Examples here are textbooks, reports and a variety of publications at the borderline between research and dissemination. The chapter concludes, however, that the question of the number of levels cannot be meaningfully discussed without also including the question of the nomination process. The analysis shows here that a large number of researchers and managers perceive the nomination process as opaque and sometimes influenced by special interests. There appears to be a low degree of legitimacy concerning this aspect of the indicator. Seen in this light, the question of the number of levels is even less straightforward, since additional levels would likely add to the opacity and lack of legitimacy concerning the nominations.

Concerning the chapter's second focal point, neutrality across disciplines, the analysis also provides indications of both problems and lack of legitimacy. Significant variation in the average points per researcher across disciplines indicates that the intention to create an indicator that is neutral across different fields has not been achieved. For example, the average number of publication points for a professor within the Humanities is around two and a half times larger than the average for a professor within the Medical Sciences. Identification of differences in the measurement of publication performance across disciplines is difficult, and the results in the evaluation should thus be treated with caution. However, the relatively large differences in average publication points per researcher appear to imply an unintentional redistribution of funding across disciplines. While there may be a number of factors behind these differences, the most important factor appears to be fractionalization rules based on the number of authors.

Use of the Publication Indicator at the institutional level

The analysis in Chapter 5 indicates that a number of the above problems are often accentuated at the institutional level, because there generally seems to be a lack of good local models for structuring incentives at the individual level.

The analysis shows that internal use of the Publication Indicator at university and university college institutions in general is characterized by considerable variation. This applies between institutions, between faculties within each institution between individual departments within the same faculty, and also to the individual units over time. This variation is particularly evident across fields where the Indicator is generally given greater emphasis within Humanities and Social Sciences than in other fields. More generally, there are also indications that the Indicator has greatest importance in areas where academic publishing has previously played a minor role, and less important in more research-intensive areas where publishing was weighted heavily before the Publication Indicator's introduction. These findings support the results obtained in the analysis of the Indicator's effects,

suggesting that the impact has been greatest in individuals and units that have not previously prioritized academic publication.

Finally, this chapter's analysis finds that economic incentives are generally weakened down through the institutions in most places, but this does not necessarily mean that the incentives as a whole are weak for the individual researcher, as the other uses of the indicator also play a major role. Overall, the main impression on the contrary is that incentives are quite strong down through the institutions. This is not least through monitoring at the individual level, in setting targets per researcher, by publishing comparisons of points at various levels, as well as through performance-based allocation of research and inputs.

More generally, the analysis in this chapter finds that it is in practice quite difficult to maintain that the Publication Indicator is only designed for use at an aggregated level. First, there seems to be a general underestimation of the strength of incentives that follow more or less directly through to the individual level. One explanation for this is that the challenges and costs associated with designing local models are ultimately borne by each unit. In addition, there generally seems to be a lack of discussion and suggestions on how to create appropriate local solutions. As a result, there appears to be considerable uncertainty as to how to handle the Publication Indicator in institutions at the lowest levels. Each department is, so to speak, alone with the problem, and there seems to be very limited coordination and communication between levels in terms of how the Indicator can be used best. Similarly, there seems to be quite limited sharing of experience on both vertical and horizontal dimensions in the system. These emerging opportunities for learning from both positive and negative experiences with the use of the Indicator at local levels are virtually non-existent. One explanation for this is, however, that the university and university college sector is generally characterized by a very high degree of autonomy of each unit in relation to questions of this nature. It is obvious that there are both good arguments and a strong tradition of self-determination, and it is also important to emphasize that there are very different challenges for different institutions. One size fits all solutions are therefore unlikely to be a good solution for the sector as a whole. Nevertheless, we believe that significantly more can be done to support the design of good local solutions. This we return to at the end of this summary.

Summary conclusion and perspectives

Regarding the overall conclusion it is natural to return to the evaluation questions: has the Publication Indicator stimulated more research, and research of higher quality? Our assessment here is that the indicator has likely helped regarding the first part of the question, but not compared to the last - at least not when we measure quality in terms of impact. When focusing on developments in publications, it is characteristic that the part of the Norwegian research around 2004 that could be identified in WoS journals was at a relatively low level in terms of both scale and impact. It is clear from this evaluation that the scale of publications during the period has increased significantly, but it is also noteworthy that the impact has not increased correspondingly. It may, however, in our view, be questionable whether the model actually was aimed at increasing quality. The Indicator's level classification was primarily introduced to prevent negative effects associated with the publication behavior rather than to ensure positive effects. In this light, it is less surprising that the indicator seems to have affected scale rather than impact. If the intention was to encourage publications of

the highest possible quality, the design of the Indicator and its reward mechanisms would probably have been different. Again it must be stressed that the increase in volume can also be attributed to other factors, notably increased resources, but our overall assessment is, as mentioned, that the Indicator most likely also played a role in this growth.

With the observed developments in mind, it can thus be argued that the situation for Norwegian research today is different than it was in 2004. Quantitative challenges now appear to be less evident, and there may thus be reason to reconsider the objectives of the sector and the tools to be used to promote it; among these the Publication Indicator. Our assessment is that it is still possible to point to a central challenge for Norwegian research in relation to the question of impact, but that this is not necessarily a challenge that must be addressed by a publication indicator of this type. In any case, it should be kept in mind that the introduction of new incentives in the Indicator may also lead to new problems. One aspect of this is discussed further below in connection with the discussion of number of levels.

It should also be mentioned that a question of eventual changes to the Indicator is above all a question of research policy objectives; of what to prioritize for the Norwegian research system as a whole, and the role the Indicator should play in the pursuit of these objectives. It is important in this context to emphasize that the specific objectives of the Indicator do not appear to be particularly explicit or clearly formulated anywhere. A significant part of the discussions related to the Indicator hinges in our opinion on this lack of clear objectives (and including clear indications of what the indicator is not capable of or suitable for). As it stands, different actors have apparently widely different views on what are appropriate problems for the indicator to solve. This will reinforce the disagreements about the appropriateness of the Indicator, just as disagreements will arise about both challenges and solutions. As mentioned, this general problem is not only related to the Publication Indicator, but rather should be discussed in an overall system perspective.

There are, however, a number of other challenges directly related to the Indicator's design and use. We will focus here on three main concerns, including an outline of some possible solutions that may be part of a forward-looking discussion of the development of the Indicator. These issues are neutrality across disciplines, the nomination process and the number of levels, as well as the implementation of incentives at lower levels. There can be put forward various arguments for and against such solutions, and there will in our view be different options for combining them. However, we do not propose fully-fledged solutions, but mainly suggestions and options that can help inform future discussions.

Neutrality across disciplines

The question of neutrality across disciplines centers mainly on the question of the redistribution of funds between fields. Given that the indicator's point system does not appear to be neutral across disciplines, is there thus an unintentional redistribution of funds between main areas? Both the analyses in this evaluation and the results of other studies on the same question indicate that this is the case, though without being able to accurately calculate the magnitude of this redistribution. A central question in this context is whether the problem has a scope that requires a solution, and if so, what solutions can be identified.

In terms of economic scale it can be argued that a relatively modest amount is transferred between fields. Though, for some individual subunits, the amount can still have importance. From this point of view it can be considered to simply accept the imbalance. However, while the economic impact is probably small, the problem may still have significance for the Indicator's overall legitimacy. Two options can be identified that address this problem: a recalibration of the point scores and / or separate pools of funds across disciplines.

Concerning recalibration there is little question that a more balanced scoring procedure could be made than the current one. In this context, rules for fractionalization could be given primary focus. However, it is highly doubtful that full neutrality can be achieved in practice. Publication traditions across areas and types of institutions are simply too different. In addition, as mentioned, there are tradeoffs associated with all adjustments and new modifications can therefore easily create different types of problems. Finally, a new calibration may open up for fighting for resources between the main areas, and the outcome of this battle will probably particularly affect some of the areas where there is already the greatest skepticism on the indicator. There are, therefore, from our perspective good reasons to consider other possible solutions.

Another possibility is to create separate pools of funds for each main field, as is done in Denmark. This would imply that competition for funding only takes place within fields and not across different fields. This makes the question of discipline neutrality irrelevant - or at least reduced to a minor problem for each main area. In addition to this, a division of funding in pools opens up the possibility for design of better adapted models for each main area. And, if funds are not redistributed across fields, part of the argument disappears for having common point allocation, joint weighting of publication types, etc. across the fields. Finally, a greater degree of adaptation of the main indicators to specific fields also implies that the costs and challenges associated with developing appropriate local models would be reduced.

There are however also arguments against this solution. First, the unique, universal element of the publication indicator disappears if separate, field-specific models are introduced. Field specific models can also result in increased administrative costs by not only having a single model, and there may arise problems with research collaboration across fields. In addition, it should also be mentioned that a field separation is not necessarily simple in practice, since a number of disciplines and institutions are located in the borderline between different fields. It will therefore require careful consideration of both the pros and cons, if an eventual separation goes further than just dividing funds into separate pools.

Nomination processes

Compared to the other central issues, the question of the nomination process involves complex challenges and a lack of simple solutions. Among the highlighted problems are transparency in the nomination process, representation in individual committees (from both small / interdisciplinary research fields, including many institutions from the institute sector) and the placement of channels among committees. Our material does not allow us to draw clear conclusions in relation to the problem's precise nature and scope. We are unable to determine the extent of these problems; whether they are widespread or primarily based on isolated cases or opinions. Regardless, there is a

need to address the lack of legitimacy that can be observed in the nomination process. Based on this evaluation we do not have a sufficient knowledge of the phenomenon to propose concrete solutions, and there are probably a number of specific issues related to individual committees. Overall, however, we believe that more can be done to increase transparency of the nomination process, including clarifying the criteria that are applied. This applies to both the general level and in relation to specific nomination decisions. At the same time it is also important to emphasize that the problems are unlikely to disappear completely. Concerning the channels that are located around the borderline of levels 1 and 2, there will always be discussion of what is most appropriate and differing opinions.

As already mentioned, this issue relates also to the question of the number of levels. As is shown in Chapter 4, a number of researchers suggest introducing one or two additional levels in the model. While there may be good arguments for both trying to reward some of the currently excluded publication types or to encourage publication in particularly prestigious channels, it is still our view that the extension of the Indicator in one (or both) of these directions will collectively result in more disadvantages than advantages. Based on the problems surrounding the nomination process, as discussed above, we believe that additional levels will complicate these processes further, and adversely affect the Indicator's overall legitimacy. First, the nomination process will be more difficult and more extensive, and also make the issue of scores and discipline neutrality even more complicated. In our view, it is necessary to find a more robust and legitimate nomination process before it should be considered whether the Indicator can be expanded with additional levels.

Implementing incentives throughout institutions

The last point concerns the question of operationalizing incentives internally within institutions and developing appropriate local models. Again, the issue is extremely complex. As pointed out both in Chapter 3 and in this summary, at the macro level we have not found evidence of perverse effects of the indicator. At the aggregate level, there is no indication of undesirable behavior as a result of the Indicator's incentives. There can certainly be found examples of this on an individual level, but not to an extent where it can be seen in the overall trends. Nevertheless, our overall impression is that the Indicator and in particular the way it is used internally in many institutions may in many cases still have some negative effects. These effects may not be immediately reflected in changes in behavior related to publishing, but may still affect the work environment, job satisfaction and the perception of meaning in research activities. The experience of working under incentive systems that may be in conflict with each other can have a significant adverse impact, with professional standards on the one hand and tangible reward and punishment on the other side pulling in opposite directions. Adverse changes in behavior in the long term can thus not be excluded. In particular, there may be a risk that new generations of researchers in will be more greatly influenced, both positively and negatively, by these incentives than older, established researchers.

The above is thus closely related to the way the Indicator is used internally in the institutions. As is argued in both Chapter 5 and in this summary, our main impression that the Indicator in many cases is used in ways that are partly contrary to the intentions and recommendations behind its construction (UHR, 2004). For example, there appears to be a tendency to use both number of points

earned and level classifications of publication channels as a quality and performance indicator also for individual researchers.

Our view is therefore that at all levels related to the indicator (Ministry, UHR, Publication committee, institutions, faculties, and departments) place more focus on ensuring that the publication indicator is used appropriately at the local level. As mentioned in Chapter 3 and 5, this could also serve as an opportunity for engaging in significant technical discussions in each unit of what should be prioritized, including the desired balance between different concerns and activities. This could be, for example between national and international publishing, between research, education and dissemination activities, between different publication types, between different forms of cooperation, etc. Such discussions may be very useful in creating locally developed models that support these priorities. In this context it is important to emphasize that these balances are not necessarily ensured solely through an array of external incentives but also through the words and actions of local management that signals these local priorities. At the same time it is important for institutional and faculty leaders to emphasize the potential problems that can be associated with implementing incentives at the level of the individual.

In this context it must also be pointed out that the simplicity and transparency of the Publication Indicator, which has been rightly praised, is at the same time a key factor in facilitating the Indicator's use at the individual level. Simplicity and transparency of the point system mean that, even for departments where local efforts to prevent that the indicator is used in undesirable ways, it is difficult to prevent it from playing a role at the individual level. Experience with bibliometric measures shows that when these types of indicators first exist and are readily available, they will often be used in both intended and unintended ways.

