



**University of
Zurich** ^{UZH}

Professorship for Quantitative Research on Higher Education

Sustainability and Perceived Impacts of Funding Programmes and Initiatives for Internationally Mobile Postdocs – Perceived Effects on Individuals, Institutions and Society.

An Exploratory Study.

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Changing landscape for the internationalisation of higher education and research

“Until recently, internationalization of higher education was largely considered as an end in itself.(...) An international survey on the benefits of internationalisation suggests institutions are increasingly considering the benefits, not just to students (and postdoctoral fellows), but to universities and society more broadly.”

Source: Marinoni et al., 2019.

“Internationalization has been presented as a universal good, as if to create a cross-border, cross-cultural or global connection is to automatically trigger a flow of all-around benefits (...). The claim is made often enough about benefits to the common good ... but the claim has mostly been couched in very general terms.”

Source: Marginson, 2019.



The current state of research

- There is evidence for impacts of funding programmes for internationally mobile postdocs at the individual level, some at the institutional level but there is rare evidence at the societal level due to the lack of empirical studies.
- The effects of mobility grants for international study and research stays have not been investigated comprehensively so far.

Individual level	Institutional level	Societal level
Evaluation studies of funding programmes for internationally mobile postdocs have provided evidence for benefits on the individual level, i.e. “the most impact (...) is gained by award recipients themselves.”	However, measurement of mobility programmes’ impacts on the institutions that send and employ scholarship recipients is rare.	“Informants familiar with the scholarship schemes were universal in their belief that they are (...) generating positive national outcomes, such as human-capital expansion, political and economic reform, improved relations with host countries ...”

Source: Engberg, 2014, p. 59-60



Outline of the research project: Exploratory study on perceived impacts of funding programmes for internationally mobile postdoctoral researchers.

Two foundations

- Volkswagen Foundation (VWS)
- Alexander von Humboldt Foundation (AvH)

Three programme modes

- Incoming
- Outgoing
- Capacity-building

Two target groups

- Fellows (alumnae / alumni)
- Hosts

Levels of analysis

- Individual
- Working group
- Institutional – university and non-university research institutions (host and return)
- Societal – a) research system and b) societal life (politics, economy and culture), in Germany as well as in developing countries



Main differences between the funding initiatives of the VWS and funding programmes of the AvH under analysis

- VWS aims at providing targeted impulses through its funding while focusing on pioneering future-oriented fields of research. AvH relies on a traditional model of provision of individual funding.
- With its individual funding, VWS focuses primarily on the individual level. The AvH pursues goals that go beyond the individual level as well.
- Capacity-building (CB) mode: The Africa initiative of the VWS funds researchers that conduct their research stays at a university in Africa. The Georg Forster Research Programme of the AvH invites fellows from developing countries for a research stay in Germany.
- The number of funded researchers within the programmes and initiatives under analysis is much higher at the AvH than at the VWS.
- The proportion of women and men among funded researchers is balanced at the VWS. Among AvH fellows and hosts, there is a clear gender gap.
- The VWS fellows were neither integrated in working groups nor had they hosts during their research stays.



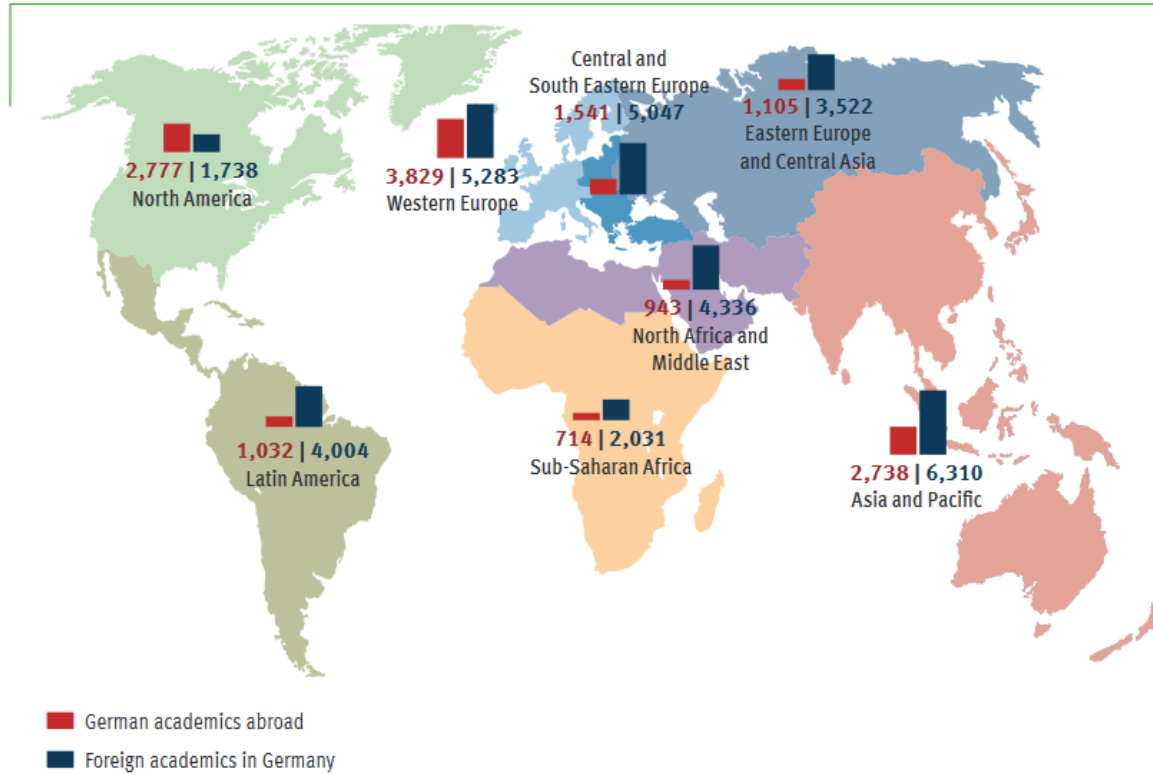
Number of alumni per foundation and funding programme / initiative

Volkswagen Foundation: 2008 - 2018	# alumni
Post-doctoral Fellowships in the Humanities at Universities and Research Institutes in Germany (together with the Andrew W. Mellon Foundation) (incoming)	36
Post-doctoral Fellowships in the Humanities at Universities and Research Institutes in the U.S. and Canada (together with the Andrew W. Mellon Foundation) (outgoing)	54
Knowledge for Tomorrow – Cooperative Research Projects in Sub-Saharan Africa (neglected tropical diseases, humanities, social sciences, livelihood management, natural resources, and engineering) (capacity building)	74
Alexander von Humboldt Foundation: 2013 - 2017	# alumni
Humboldt Research Fellowships (HFS, incoming)	2,153
Sofja Kovalevskaja Award (SKP, incoming)	35
Feodor Lynen Research Fellowships (FLP, outgoing)	429
Georg Forster Research Fellowships (GFP, incoming/capacity building)	284



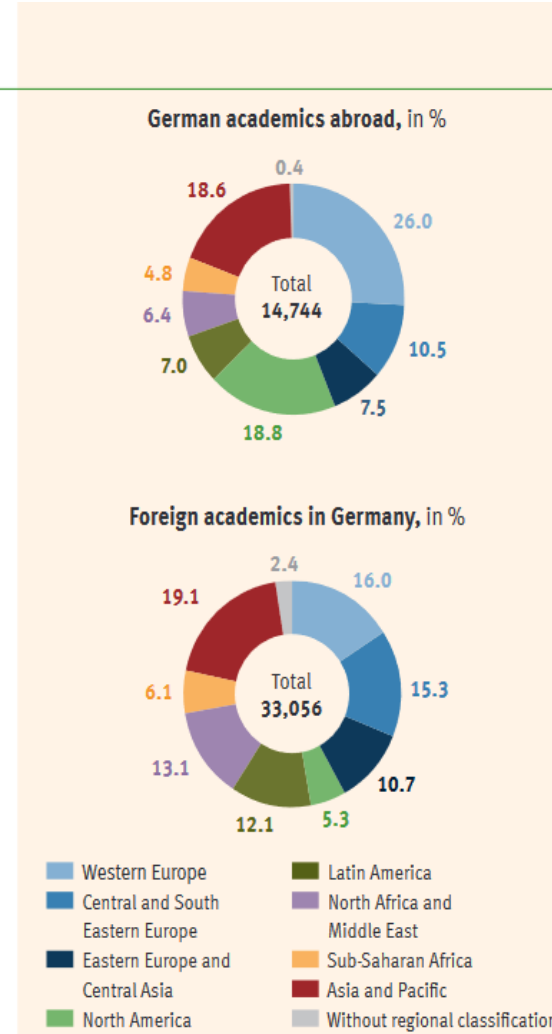
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29 | Funded visits of German academics abroad and foreign academics in Germany, in 2017, by host region and region of origin



The 65 German and 785 foreign academics whose host regions or regions of origin are not known have not been taken into account.

Fig. 29
Source: Numbers of the funding organisations; DZHW calculation



Source: Heublein et al., 2020, p. 19.

Notes: Data includes foreign guest researchers in Germany funded by German funding organisations and German guest researchers abroad funded by German funding organisations. Funded groups include postgraduates, postdocs and academics/researchers/university teachers.



Research methodology: methods and tools

- Analysis of initiatives' / programmes' documentation and reconstruction of intervention logics for the respective funding programmes / initiatives,
- Literature research on selected topics (such as research team diversity and productivity, migrant scientists and international networks, career tracking of international postdocs, return migration),
- Two-stage online surveys of fellows / alumnae and alumni on impacts of funding and on their career paths,
- An online survey of hosts of incoming fellows at German universities and research institutions (only AvH),
- A bibliometric analysis, i.e. mapping of citing authors' institutional affiliations before and after funding (sample).
- Neither an evaluation nor a comparison of the programmes or the foundations was intended.
- The aim of this study was to explore the broad range of impacts that a) postdoctoral researchers experienced due to individual funding for international long-term mobility they received, and b) the postdocs and their hosts perceived that the fellows' funding has had on the working group, institutions and society.



Online surveys of fellows

1st round:

- Timeline: February – April 2019
- Sampling plan: census survey (except for HFS – 20 per cent)
- Qualitative: Open questions on impacts of the fellowships at different levels

2nd round:

- Timeline: July – August 2019
- Sampling plan: census survey
- Quantitative: Fellows were asked to report whether the impacts of the funding reported by the fellows in the 1st round of the survey occurred in their case.
- At the different levels, 19 – 43 items / impacts were listed in the questionnaire.



Response rates for online surveys of fellows: VWS

Volkswagen Foundation	1 st round		2 nd round	
	#net ^a	Response rate	#net ^a	Response rate
Post-doctoral Fellowships in the Humanities in Germany (incoming)	36	69%	36	78%
Post-doctoral Fellowships in the Humanities in the U.S. and Canada (outgoing)	54	72%	54	89%
Knowledge for Tomorrow – Cooperative Research Projects in Sub-Saharan Africa (capacity building)	74	65%	74	76%

^a population size minus those who were not reached (e.g. invalid email address)

Response rates for AvH fellows: 46 - 68%



Selected results

- 1. General observations**
- 2. Results at the different levels of analysis**
- 3. In-depth analyses: - career development
- international visibility**



General observations

Impacts at the different levels

- The majority of impacts were reported at the individual level. As the levels become more distant from the fellow (the working group, the institution, the research system, society), a decreasing tendency to report impacts was observed. The exception to this are GFP and the Knowledge for Tomorrow (Africa Initiative) of the VWS. → Possibly an indication of strong perception of relevance of research in developing countries, emerging economies and transition states.

Negative impacts

- They were (among) the least often mentioned impacts reported by the fellows and hosts at all levels.

Societal impacts

- The fellows in the CB mode were more likely to report on the societal impact than the fellows in the other modes (and this is more the case for the VWS than the AvH).



Results at the different levels of analysis

- The following slides present selected most often and least often reported impacts.
- Some impact items were less applicable to the Humanities than others and some were not applicable at all. They have either socio-economic (industrial outreach, establishing a start-up, collaborations between research and the private sector, generating jobs in the private sector, improved products or processes) or socio-political (influence on national policy-making, founding of an NGO, science policy discussions, influence on society from outside academia) character. Therefore, they were reported only seldom or not at all by the fellows in the Humanities.
- Another group of least reported items were the negative ones.
- However, some impact items might have been expected to be reported more often (or less often in case of a few negative items) than they did (they are underlined).
- As far as the capacity building fellows are concerned, it is remarkable that there were not any impacts that would have been reported seldom in terms of the research systems in sub-Saharan Africa (29% was the lowest number).



Post-doctoral Fellowships in the Humanities in Germany and the U.S. (incoming fellows)



Individual level

In academic terms, the following personal impacts occurred in my case due to the funding:

(N = 28 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I had (more) time to concentrate on research.	100	28
I advanced my career in research.*	93	26
I increased my visibility in international research.**	82	23
I increased my academic confidence.	82	23
Least often occurred		
My research network in my home country worsened because of my research stay abroad.	7	2
I faced competition rather than cooperation.	7	2
After the end of my research stay, I built my own research team, lab or a centre.	4	1
The re-integration in the research system in my home country was difficult after the stay abroad.	4	1

Notes: * This topic will be presented in more detail on p. 55-59.

** This topic will be presented in more detail on p. 60-63.



Institutional level

The host institution in Germany benefited from my research stay in the following way:

(N = 28 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I helped increase the institutional visibility.	50	14
Other projects at the institution benefited from my contribution.	29	8
I encouraged other researchers at the institution to apply for international fellowships.*	29	8
Least often occurred		
<u>Researchers that I met during my fellowship visited my institution later.</u>	18	5
...		
I started a new line of research at the institution.	7	2
I became a contact person for the institution searching for partners.	7	2
I helped the institution launch a spin-off.	0	0

Notes: * This topic will be presented in more detail on p. 52.



Societal level – research system in Germany

The funding of my research project added value to the research system in Germany in the following way:
(N = 28 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I raised awareness of research opportunities available in Germany.	86	24
I maintained my contact with Germany.*	75	21
I informed German researchers about research systems of other countries.	57	16
Least often occurred		
I conducted research on global issues (e.g. climate change).	21	6
I contributed to the internationalisation of teaching at German universities.	21	6
<u>I helped build research capacity in Germany.</u>	18	5
<u>I hosted or supervised German PhD candidates or students after the return to my home country.</u>	7	2

Notes: * This topic will be presented in more detail on p. 53.



Societal level – other aspects of societal life in Germany

The funding of my research project added value to other aspects of societal life in Germany, such as culture, politics, or economy in the following way:

(N = 28 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I conveyed my favorable impressions of Germany to friends, colleagues or family.	89	25
I recommended Germany as a tourist destination.	79	22
I encouraged young researchers in my home country to learn German.	54	15
Least often occurred		
I reached a position outside academia where I can influence society.	4	1
The research project strengthened my engagement with policy makers at the local or national level.	4	1
My research contributed to science policy discussions in Germany.	4	1
My research influenced national policy-making in Germany.	0	0



Post-doctoral Fellowships in the Humanities in Germany and the U.S. (outgoing fellows)



Individual level

In academic terms, the following personal impacts occurred in my case due to funding:
(N = 48 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I increased my visibility in international research.*	92	44
I had (more) time to concentrate on research.	83	40
My reputation increased.	83	40
The research stay meant a lot for my personal development.	83	40
...		
<u>I advanced my career in research.</u>	69	33
Least often occurred		
<u>Finding a job after the end of the fellowship was more difficult than I expected.</u>	23	11
<u>The re-integration in the research system in my home country was difficult after the stay abroad.</u>	17	8
...		
I moved into a more prestigious research institution.	6	3
I faced competition rather than cooperation.	0	0

Notes: * This topic will be presented in more detail on p. 60-63.



Institutional level

The institution where I was active in Germany before and after my fellowship benefited from my research stay abroad in the following way: :

(N = 48 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I helped increase the institutional visibility.	60	29
I encouraged other researchers at the institution to apply for international fellowships.	54	26
Researchers that I met during my fellowship visited my institution later.	42	20
Least often occurred		
<u>The institution broadened its network by new collaborative partners.</u>	15	7
<u>I became a contact person for the institution searching for partners.</u>	10	5
Results or data from my research fed into follow-up projects at the institution.	10	5
...		
I helped the institution launch a spin-off.	2	1



Societal level – research system in Germany

The funding of my research project added value to the research system in Germany in the following way:
(N = 48 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I informed German researchers about research systems of other countries.	68	29
The project increased the international visibility of research conducted in Germany.	58	28
The project strengthened international research networks of Germany.	50	24
Least often occurred		
I hosted or supervised German PhD candidates or students after the return to my home country.	13	6
There was not much added value because my research stay encouraged me to look for possibilities for a permanent stay abroad.	13	6
The German society did not benefit much from my research stay since I did not reintegrate into the German research system.	8	4
The German society did not benefit much from my research stay because I did not return to Germany.	4	2



Societal level – other aspects of societal life in Germany

The funding of my research project added value to other aspects of societal life in Germany, such as culture, politics, or economy in the following way:

(N = 48 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I conveyed my favorable impressions of my host country to friends, colleagues or family in Germany.	65	31
My research stay had a positive impact on Germany's image abroad.	44	21
I was involved in public outreach activities.	33	16
Least often occurred		
The research project helped form a network with different societal stakeholders.	8	4
The research project drew public attention in Germany to hitherto neglected problems.	8	4
I reached a position outside academia where I can influence society.	2	1
My research influenced national policy-making in Germany.	0	0



Knowledge for Tomorrow (capacity building fellows)



Individual level

In academic terms, the following personal impacts occurred in my case due to the funding:

(N = 56 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I increased my capacity to conduct high quality research (methods, techniques, approaches, etc.).	95	53
I broadened my network by new collaborative partners.	93	52
I improved my research management skills.	89	50
I increased my visibility in international research.	88	49
I improved my leadership capacity.	88	49
I improved my mentoring skills.	88	49
Least often occurred		
The re-integration in the research system in my home country was difficult after the fellowship.	5	3
My research network in my home country worsened because of my fellowship.	4	2
Finding a job after the end of the fellowship was more difficult than I expected.	4	2



Institutional level

The institution where I conducted my research benefited from the funding in the following way:
(N = 56 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I encouraged other researchers at the institution to apply for international fellowships.	93	52
I helped increase the institutional visibility.	80	45
I helped improve the institution's publication performance.	75	42
I taught or advised (PhD) students at the institution.	75	42
Least often occurred		
I helped the institution launch a spin-off.	13	7
The institution benefited from my industrial outreach activities (e.g. patents, licences).	9	5
The institution did not benefit much because it had rather little interest in my experience from abroad and its application.	4	2



Societal level – research system in sub-Saharan Africa

My funding of my research project added value to the research systems in sub-Saharan Africa in the following way:

(N = 56 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I conducted research relevant to the development of my home country.	88	49
The project increased the international visibility of research conducted in sub-Saharan Africa.	82	46
I conducted research on pertinent issues affecting local populations.	80	45
Least often occurred		
I introduced new lines of enquiry, methods, or theories to research in sub-Saharan Africa.	48	27
Researchers whom I brought later to sub-Saharan Africa helped internationalise the research landscape there.	32	18
I contributed to the internationalisation of teaching in sub-Saharan Africa.	29	16



Societal level – other aspects of societal life in sub-Saharan Africa

The funding of my research project added value to other aspects of societal life in sub-Saharan Africa, such as culture, politics, or economy in the following way:

(N = 56 respondents, sorted in descending order by total per cent)

Selected impacts	%	N
Most often occurred		
I conveyed my favorable impressions of Germany to friends, colleagues or family.	64	36
The research project helped form a network with different societal stakeholders.	61	34
I reached a position in academia where I can influence society.	59	33
The research project influenced the discourse on certain problems in society.	59	33
I intensified my engagement for local communities.	59	33
Least often occurred		
I founded a NGO in sub-Saharan Africa with researchers I met during the funding period.	5	3
I established a start-up company in sub-Saharan Africa utilising my competence I acquired during the funding period.	4	2
My research had industrial outreach (e.g. patents, licences) in sub-Saharan Africa.	2	1



**In-depth analyses: - career development
- international visibility**



Career development



General observations

- Comparing the time points of the application, immediately after the fellowship and when the data was collected, the **careers of the fellows developed considerably**, both in terms of receiving an open-ended and full-time employment contract as well as in terms of advancing from the R2 (recognised researchers) over R3 (established researchers) to R4 (leading researchers) stage.
- This development was observed regardless of the baseline situation, though of course, where a considerable proportion of the fellows held an open-ended contract before the funding had begun, the progression was less remarkable.



Employment contract

What type of employment contract did / do you have within research when you submitted your application for funding / immediately after your funding ended / at the moment?

(Percentage of those engaged in research for the answer “full-time and open ended”)

Volkswagen Foundation:	When applied for fellowship	At the end of fellowship	At the moment
Post-doctoral Fellowships in the Humanities in Germany (incoming)	55	63	65
Post-doctoral Fellowships in the Humanities in the U.S. and Canada (outgoing)	0	0*	22
Knowledge for Tomorrow – Cooperative Research Projects in Sub-Saharan Africa	48	66	66

* = same results as at the application date because a change after the end of the fellowship as compared to 'at the time of the application' is not foreseen.



Career stages

At which level were/are you active as a researcher when you submitted your grant application / after your funding ended / currently? (column percentages)

Post-doc Fellowships in the Humanities in Germany (incoming)	Position	Application date	At the end of the fellowship	At the moment
	R2	40	30	20
R3	56	57	58	
R4	4	13	21	

Post-doc Fellowships in the Humanities in the U.S. and Canada (outgoing)	Position	Application date	At the end of the fellowship	At the moment
	R2	87	87*	42
R3	14	14*	36	
R4	0	0*	22	

* = same results as at the application date because a change after the end of the fellowship as compared to 'at the time of the application' is not foreseen.

Knowledge for Tomorrow (capacity building)	Position	Application date	At the end of the fellowship	At the moment
	R2	86	38	26
R3	14	42	45	
R4	0	20	30	



International visibility



Mapping of citing authors' institutional affiliations

- Measuring the development of the international visibility of postdoctoral fellows over time by *citing authors' institutional affiliations*
- Selected researcher: Africa, VWS senior fellow, Natural Resources “Neglected Communicable Tropical Diseases and Related Public Health Research”, funded between 2008 and 2011
- Publication search: authorised publication list (when applied) and SCOPUS-ID (2007-8/2019) ->103 publications
- Data base: addresses of correspondence authors, who cited the publications of the selected researcher (letter, review, article)
- Data cleaning: overall 2,303 citations (SCOPUS) of all document types, 2,088 citations with affiliations, for ~95% of the citations the locations could be identified (geo coordinates)
- 2 Figures: 1. Citing authors network for all citing publications until 2008 (when applied)
2. Citing authors network for all citing publications from 2012 until 8/2019.
- The bibliometric analyses showed that a strong or a very strong increase in the number of citing institutions, as well as global and local expansion of citing authors' institutional affiliations were found.



Mapping of citing authors' institutional affiliations for a selected VWS fellow

Institutional affiliation of authors who cited publications of the VWS fellow that he or she had published up to the beginning of the funding.





Mapping of citing authors' institutional affiliations for a selected VWS fellow

Institutional affiliation of authors who cited publications of the VWS fellow that he or she had published from the end of the fellowship until 2019





Suggestions for further steps



Sustainability of cooperation

- The most often observed at the societal level was the fact that the former incoming fellows maintained their contact with Germany (75%, 21 out of 28 fellows).
 - The continuation of the cooperation between the researchers and the institution was observed by a fourth of the fellows (25%, 7 out of 28 fellows).
 - Less than a fifth reported to have hosted visits by researchers of the former host institution at the institution where they were engaged after the end of the funding (18%, 5 out of 28 fellows).
 - However, the incoming fellows perceived only rarely to have become a contact person for the institution searching for partners (7%, 2 out of 28 fellows).
 - The results indicate a moderate tendency for funded cooperation to last. However, the continuity has to be looked at not only from a short-term (directly after the fellowship) but also from a long-term perspective as the former fellows become the so-called “bridge-heads”.
- Could the sustainability of cooperation be improved (i.e. former fellows acting as hosts, integration of incoming fellows into working groups)?



Internationalisation@home

- Less than a third of the incoming fellows perceived to have encouraged other researchers at the host institution to apply for international fellowships (29%, 8 out of 28 fellows).
- About a fifth of the incoming fellows (21%, 6 out of 28 fellows) reported on their contribution to the internationalisation of teaching (e.g. organised a journal club, study group) at the host institution in Germany.
- Finally, the incoming fellows observed that (PhD) students at the host institution benefitted from the advice or teaching (14%, 4 out of 28 fellows).

→ Could research stays of international mobile postdocs coming to Germany for a research stay be used more strongly in future for the internationalisation of universities @home?



Analysis of socio-economic impacts

The fellows reported **socio-economic impacts** rather rarely. To learn more about socio-economic impacts of the funding initiatives for internationally mobile postdocs, one could analyse the database of the integrated employment biography of the **Integrated Employment Biographies Sample*** (IEBS) of the Institute for Employment Research (IAB). With the help of IEBS, it is possible to trace employment biographies of employees subject to social security contributions – consisting of periods of employment, periods of unemployment, periods of job search, and participation in active labour market programmes.

Examples for research questions:

- How long would former fellowship holders from abroad have to work in Germany until all costs incurred by the fellowship are amortized?
- How do the employment histories of former fellows compare to internationally non-mobile postdocs in Germany?

* https://fdz.iab.de/en/FDZ_Individual_Data/Integrated_Employment_Biographies.aspx

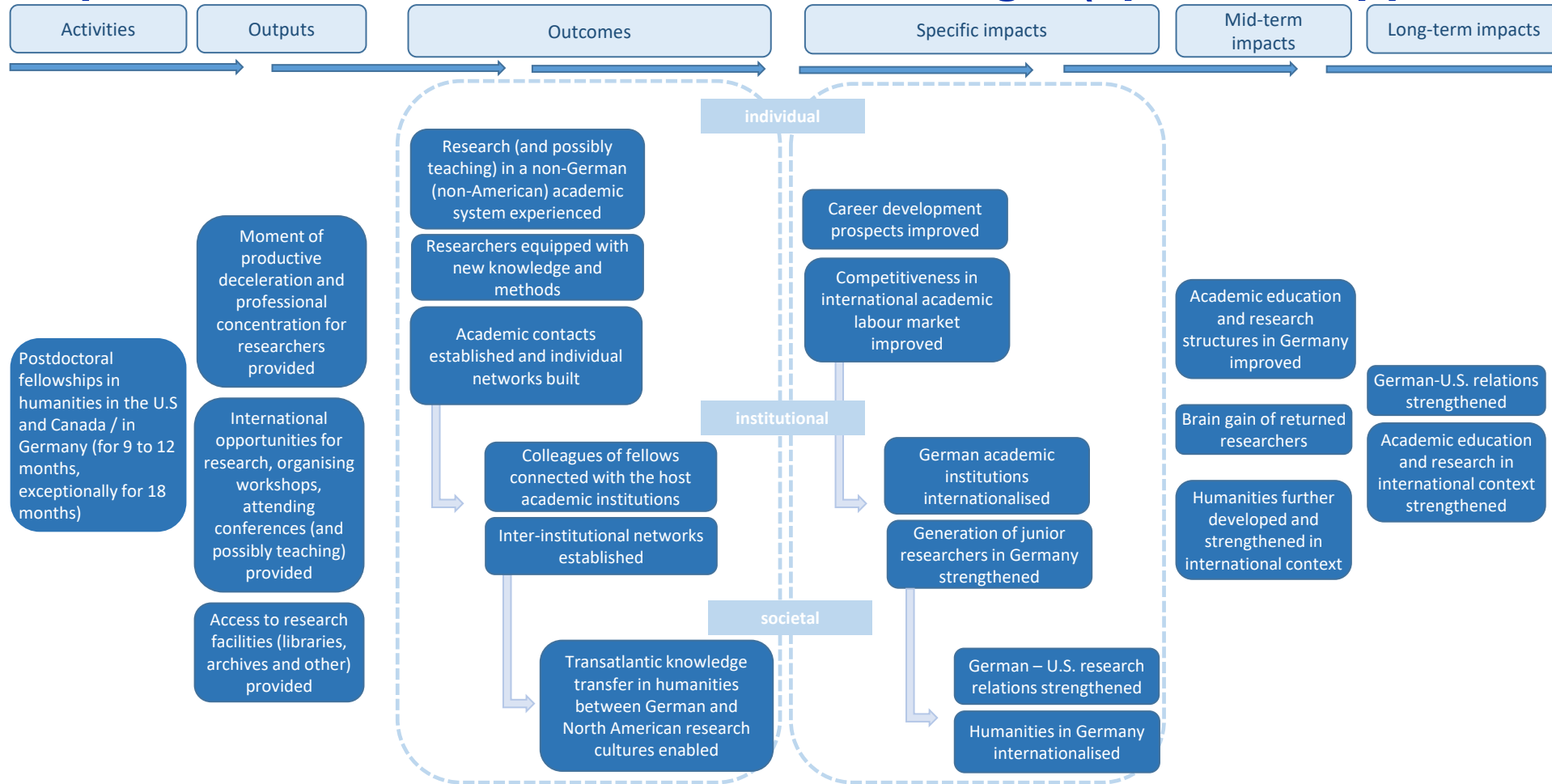


Improving the design of funding initiatives: strategic questions

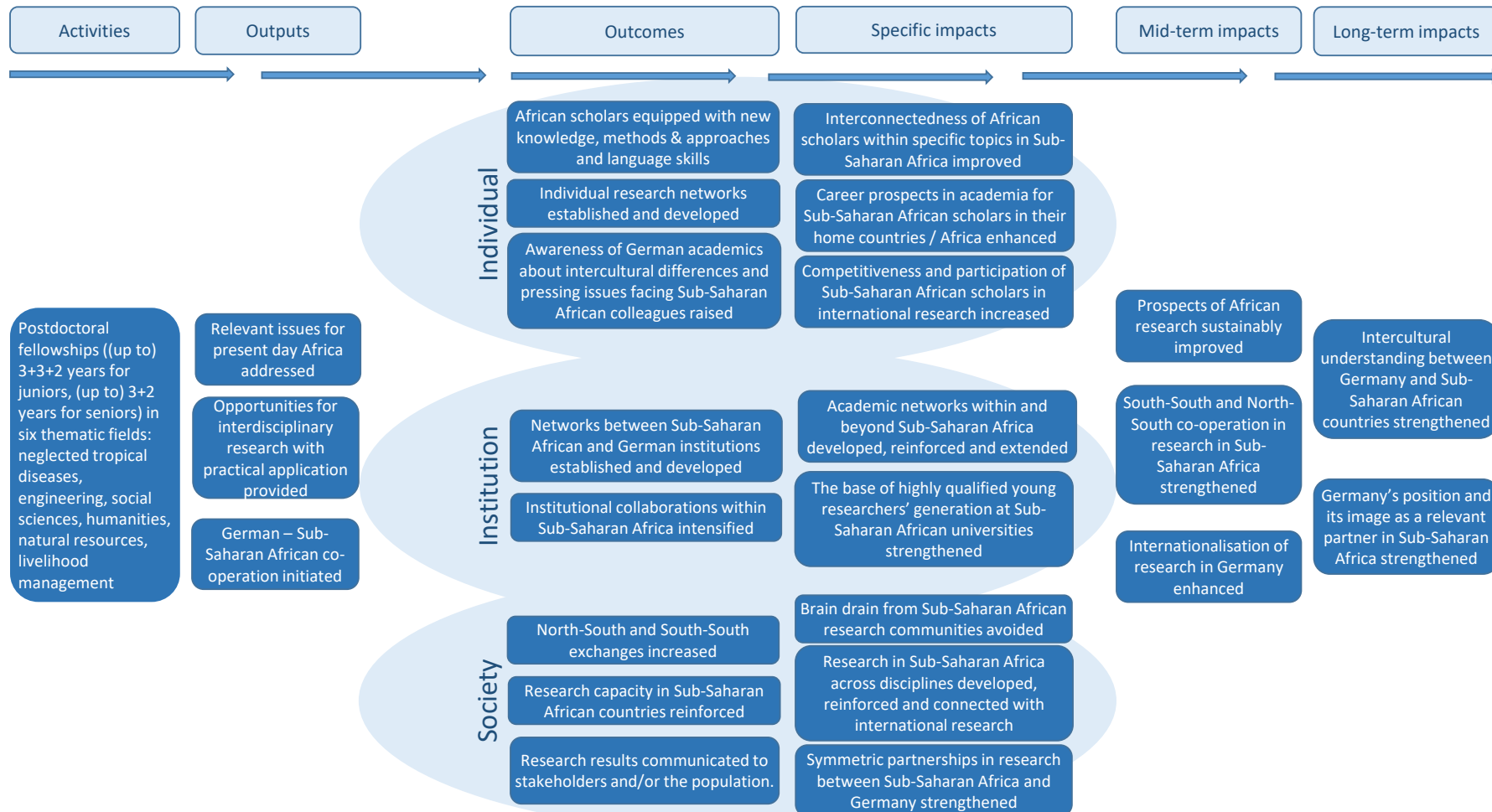
- At what levels does the VWS want to pursue objectives within a funding initiative?
- Should the level of the working group be considered in the design of the initiatives?
- Should the focus be just at the individual level, arguing that the individual funding is what is provided?
- Or, should the focus remain at the individual level but spill-over effects (to the institution and society) should be taken into account as well?
- Or, does the VWS want to pursue goals at the individual, working group (?), institutional and societal level (research system and other aspects of societal life)?
- How does VWS aim to ensure the sustainability of the cooperation stimulated by the funding?
- See the examples of two intervention logics on the following pages (“Example 1” for the spill-over approach and “Example 2” for the approach that considers the individual, institutional and societal level explicitly).



Example 1 of a reconstructed intervention logic (spill-over approach)



Example 2 of a reconstructed intervention logic (with the levels “Individual”, “Institution”, “Society” explicitly addressed)





Improving the design of funding initiatives: next steps

Concrete proposals:

1. Design of intervention logics (ILs) for each funding initiative
2. Operationalisation of the ILs (indicators, target values, monitoring)



Development of tailored funding initiatives by quasi-experimental designs

- In this explorative study, a large number of perceived impacts were brought to light by the fellows at different levels. In a next step, special research designs, so-called **quasi-experiments**, can be used to disentangle the specific impacts of the funding initiatives from impacts of other conditions, which are not relevant for funding (e.g., topic, age of fellows, ...) as part of an impact evaluation.
- For the perceived impacts indicators have to be developed, which can be empirically measured.
- Research designs (e.g., regression discontinuity design) and modern data technology (e.g., propensity score matching) can help to develop **funding initiatives tailored to specific impacts**.



**Thank you very much for your for your interest in
the research project!**



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