



Study results „Internationalisation of CRCs“
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Overview

- Background and aim of the study
- Method
- Main results
- Conclusion





Background and aim of the study

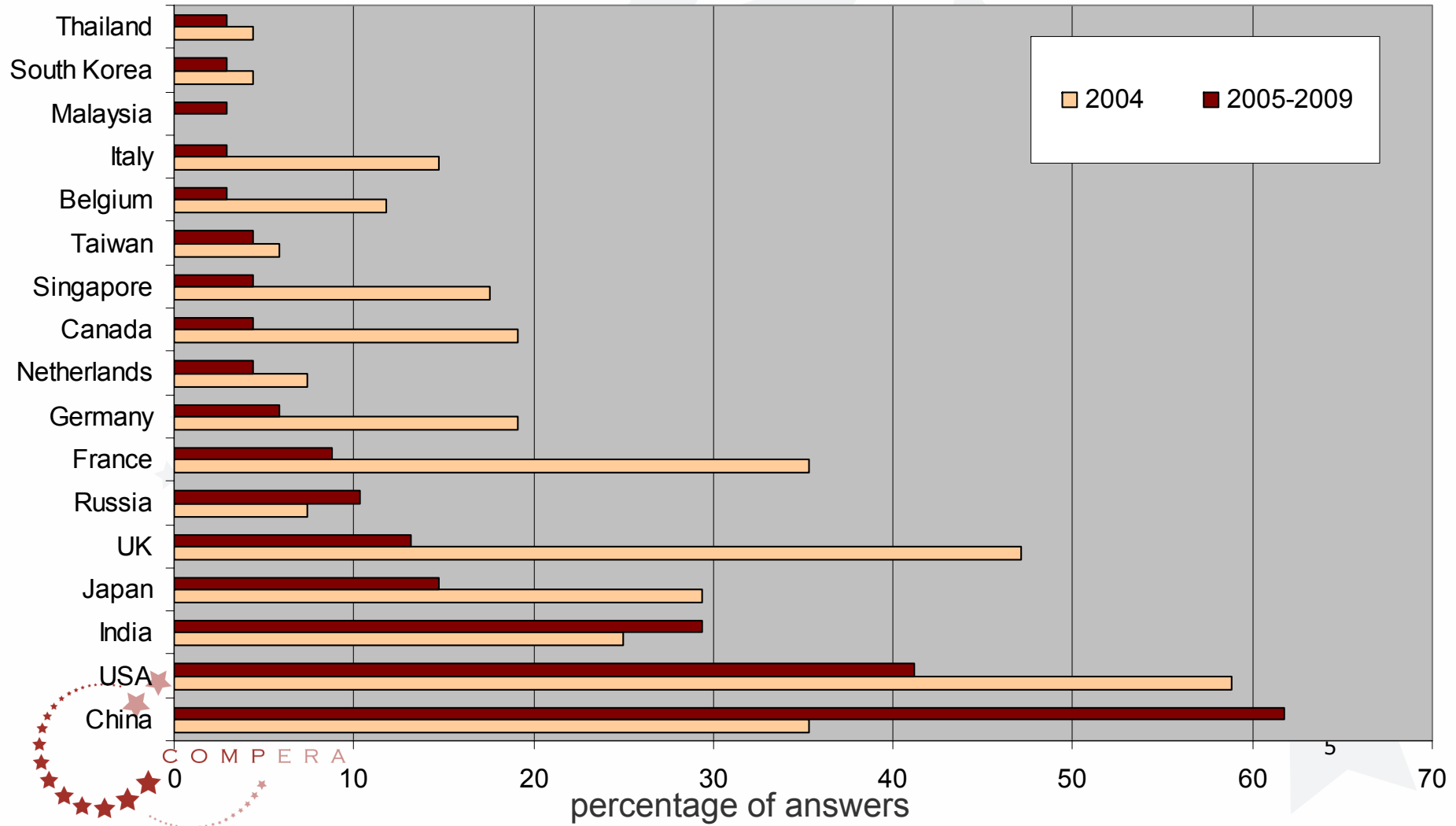


Background

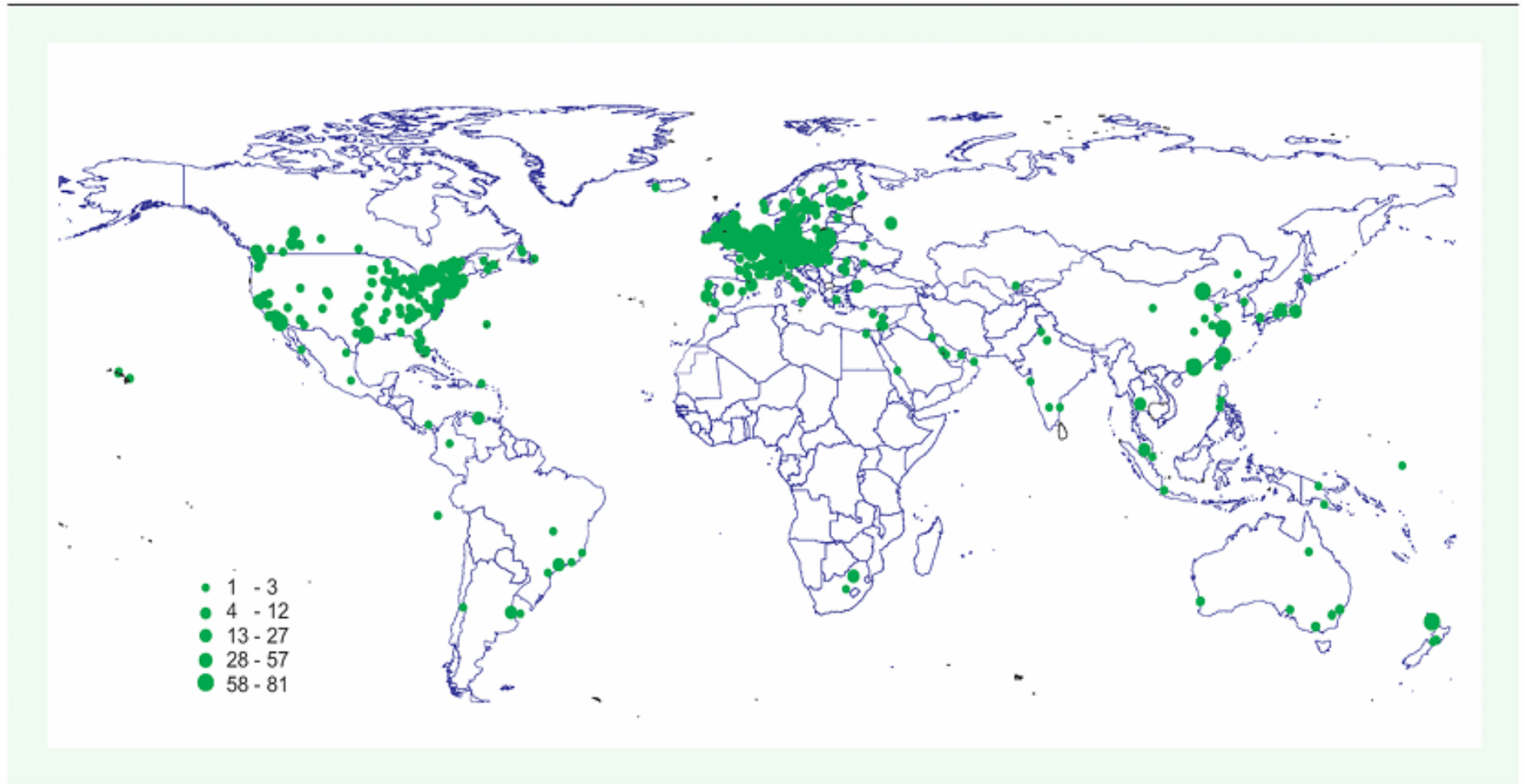
- The world is changing dramatically:
 - New R&D locations are developing.
 - International division of labour not limited to production but also to R&D.
- Large multinationals focus their R&D on a limited number of locations. These decisions seem to be highly volatile.
- Successful CRCs are nodes of international networks. This is not only true for smaller countries but also for comparatively larger countries such as Germany!



Most attractive research locations 2004 and 2005-2009; according to UNCTAD enterprise survey 2005



Worldwide locations of majority-owned foreign affiliates in R&D



Source: UNCTAD, based on the *Who Owns Whom* database (Dun & Bradstreet).

Note: On the basis of 2,603 majority-owned foreign affiliates engaged in R&D.

Aim of the study

- identify types, criteria and indicators of international CRCs
- learn more about opportunities and risks of the international integration of CRCs
- describe instruments and strategies for the international integration of CRCs (and to assess their transferability to Germany)
- draw conclusions concerning a corresponding political framework.

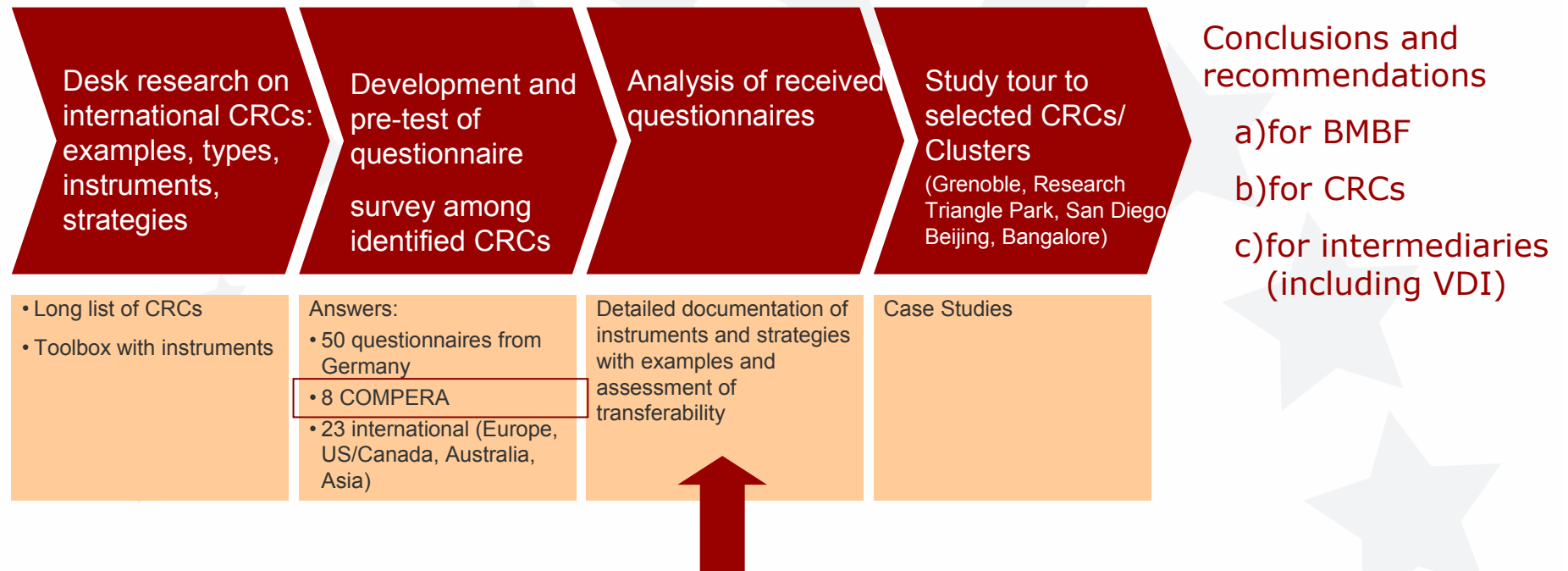




Methodology



Method and work packages



“Source of Inspiration”
for COMPERA



What are international „competence nodes“?

- Internationally renowned researchers work at this location.
- Excellent universities attract the best students worldwide.
- Cutting-edge projects; above-average number of publications and patent applications.
- Investments of Large Multinational Enterprises in production and (private, commercial) research infrastructure.
- SME are embedded in international production and R&D networks.
- Location attracts public and private research funding.





Survey results



Part 1: What are the most competitive regions worldwide?

The following tables summarise those locations that have been mentioned most often. Free answers, no pre-structured list.

Europe

Name der Region oder des Clusters	Thematischer Fokus
Cambridge	Life Sciences, High Tech ✓
Eindhoven	ICT ✓
Leuven	ICT ✓
Finland	ICT ✓ ✓
Grenoble	Nanobio, Semiconductor ✓
Medicon Valley	Life Sciences ✓
München	Life Sciences ✓
Neue Bundesländer	Chemie ✓
Saxony	Semiconductor Industry ✓

✓: questionnaire received

✓: visited (study tour)

Outside Europe

Name der Region oder des Clusters	Thematischer Fokus
Bay Area	Life Sciences ✓
Southern California	Life Sciences ✓ ✓
China	Steel and Manufacturing, Hightech, Biotech ✓
Hsinchu Science Park	ICT, OptoElectronics ✓
India	Biotech, Software Development ✓
Research Triangle Park	Biotechnology ✓ ✓
Route 128, Boston	Hightech ✓
Silicon Valley	ICT, Semiconductor ✓
New York State	ICT ✓
Singapore	Life Sciences ✓
Zhangjiang Technology Park	ICT, Hightech ✓
Zhongguancun Science Park	ICT ✓ ✓



Part 2: Most attractive instruments – general insights

- 47 instruments identified
- detailed description of these instruments, including good practice examples and SWOT analyses (sorry, in German only)
- Main result: international embeddedness is not only result of scientific excellence. All excellent location apply instruments to further strengthen internationalisation.
- Instruments aimed at attracting human capital are most important – in all regions of the world.
- The best-rated instruments are not those that are used most often.



List of Instruments (1-21)

No.	Instrument
1	Formation of trans-border Networks and Clusters in order to enhance critical mass and visibility
2	Establishing contact points abroad ("bridge heads")
3	Identification of "missing links" in the regional / national value chain and active search for complementary partners (enterprises, institutes) abroad
4	Participation in international matchmaking events
6	Membership in international organisations (f. ex.. ERA-Nets, AUTM, Science Alliance)
7	Communication measures towards an international target group: brochures, leaflets, print- and online, exhibition/fairs about cluster/region/country, press releases etc.
8	Participation in official delegation in foreign countries, which are organized by public actors
9	Participation in marketing activities in foreign countries / abroad, which are organized by public actors
10	Participation in exhibitions / fairs on clusters, f. ex. as a part of international events
11	Investment in international outstanding cooperation structures with industry (PPP)
12	Measures aimed at increasing the participation in - and/or the management of - large European networks and Technology Platforms
13	Acquisition of international members in steering committee of Networks and Clusters
14	Acquisition of foreign evaluators for Networks and Clusters
15	Measures aimed at enhancing the "international competences" of SMEs (support of entry in international markets, negotiation skills etc.)
16	Participation in international fact-finding missions
17	Market information concerning prioritized foreign markets
18	Acquisition of R&D centers of large international enterprises
19	Measures aimed at attracting outstanding foreign students (f. ex.. English language graduate schools, international summer schools)
20	Measures aimed at maintaining linkages to foreign alumni (students, researchers)
21	Measures aimed at enhancing the "international competences" of Network and Cluster managers (international project management, language skills etc.)

List of Instruments (22-47)


25	Support of stays abroad of researchers
26	Helping to identify international projects
27	Helping to become a partner in international projects
28	Helping to manage international projects
29	Measures aimed at attracting excellent foreign researchers
30	Acquisition of contract research from foreign enterprises for the research organisations of the Network of Cluster
31	Information on research trends in foreign countries
32	Transparency measures concerning foreign research organisations, their strategies and funding programmes
33	Support of participation of Networks and Clusters in international projects (Word Bank etc.)
34	Acquisition of foreign Venture Capitalist to settle down in the region
35	IPR regulations focusing on the regional accumulation of knowledge
36	IPR regulations encouraging the active participation of foreign partners
37	Taking over an international leading position / function in processes of standardisation and creation of technical regulations / norms.
38	Investment in internationally attractive research infrastructure
39	Agreements on co-operation with foreign clusters and networks concerning the acquisition and use of research infrastructure
40	Full participation of foreign research partners in Networks and Clusters
41	Full participation of foreign enterprise partners in Networks and Clusters
42	Opening research project funding programmes for participation of foreign research institutions
43	Opening research project funding programmes for participation of foreign enterprises
44	Joint Calls, f. ex.. with neighbouring countries/regions
45	Crossborder alignment of public research programmes (complementary research topics, mutual opening, roadmaps)
46	Internationally attractive public support in the field of foreign investment
47	Support packages for foreign enterprises (tax relieves, investment subsidies, preferential access to real estate)

11 Investitionen in international attraktive Kooperationsstrukturen mit der Industrie (PPP)

Kurzbeschreibung: Gemeinsam mit Unternehmen entstehen in Public Private Partnership anwendungsorientierte Forschungs- und Entwicklungseinrichtungen zwischen Wirtschaft und Wissenschaft. Diese werden anteilig von den Unternehmenspartnern und öffentlichen Akteuren finanziert. Zielsetzung ist es, über diese Forschungs- und Entwicklungseinrichtungen den Cluster bzw. die Region für Akteure aus dem In- und Ausland so attraktiv zu machen, dass diese eine Sogwirkung für Wissenschaftler sowie weitere Unternehmen, z.B. im Rahmen von Forschungskoperationen, entfalten kann.

	Rang (Nutzungshäufigkeit)	Rang (Bewertung)	Kategorie (Handlungsfelder)	good practice Beispiele (schriftliche Befragung)
national	34	31	4	• IMEC
COMPERA	-	-	-	
international (bei Rang: alle/US/EU)	43	39/27/35	4	
Das Instrument wird insgesamt sehr skeptisch beurteilt, was sich nicht nur in einer geringen Nutzungshäufigkeit, sondern auch in einer niedrigen Gesamtbewertung äußert. Woran dies liegt, zeigt die Auswertung der schriftlichen Befragung: Insgesamt wird befürchtet, dass durch das Engagement von Großunternehmen diese eine dominante Rolle einnehmen, etwa auch hinsichtlich der Nutzung und Verwertung der Forschungsergebnisse, die im Rahmen der jeweiligen Infrastruktur entstehen. KMU können systematisch von der Nutzung ausgeschlossen oder in den Dienst der finanzierenden großen Unternehmen gestellt werden. Entsprechend urteilt ein Befragter: „macht nur Sinn, wenn die regionalen NW-Mitglieder (KMU) davon einen konkreten Nutzen erwarten dürfen“.				

Good Practice - IMEC

Trotz der großen Skepsis gegenüber dem Instrument scheint es ein Beispiel für good practice zu geben: IMEC ist eine Forschungseinrichtung, die von der flämischen Regierung mit dem Ziel gegründet wurde, eine Forschungs- und Entwicklungsplattform im Bereich Nanotechnologie für Akteure aus Forschung und Wirtschaft weltweit zu bieten. Unternehmen haben die Möglichkeit, sich an IMEC dadurch zu beteiligen, dass sie im Rahmen eines spezifischen Forschungsprojektes einen Mitarbeiter an das IMEC entsenden und sich außerdem finanziell an dem Projekt beteiligen.  des Personals sowie anteilig die Infrastruktur durch Unternehmen finanziert.

Von den insgesamt 1500 Beschäftigten sind 500 sogenannte „industrial residents“, d.h. Mitarbeiter der Industrie, die für eine befristete Zeit an das IMEC abgeordnet werden und deren Gehalt weiter von der Industrie bezahlt wird. Im Jahr 2005 trugen internationale Unternehmen mit 55% zum Gesamtbudget bei; weitere 18% kamen von der flämischen Industrie.



Example for portrait of instrument.

Your questionnaires have been extremely helpful!

The 10 best instruments according to international CRCs

No.	All	US	EU	D	Instruments/tools supporting the internationalisation of Networks and Clusters	Ø
29	1	1	4	3	Measures aimed at attracting excellent foreign researchers	4,00
15	2	7	2	13	Measures aimed at enhancing the "international competences" of SMEs (support of entry in international markets, negotiation skills etc.)	3,93
19	3	9	3	1	Measures aimed at attracting outstanding foreign students (f. ex. English language graduate schools, international summer schools)	3,93
2	4	18	9	21	Establishing contact points abroad ("bridge heads")	3,88
47	5	2	41	33	Support packages for foreign enterprises (tax relieves, investment subsidies, preferential access to real estate)	3,82
6	6	4	6	9	Membership in international organisations (f. ex. ERA-Nets, AUTM, Science Alliance)	3,75
46	7	10	21	24	Internationally attractive public support in the field of foreign investment	3,75
31	8	8	18	26	Information on research trends in foreign countries	3,71
30	9	12	22	32	Acquisition of contract research from foreign enterprises for the research organisations of the Network of Cluster	3,69
18	10	21	20	14	Acquisition of R&D centers of large international enterprises	3,67



Comments:

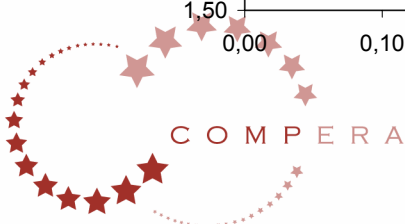
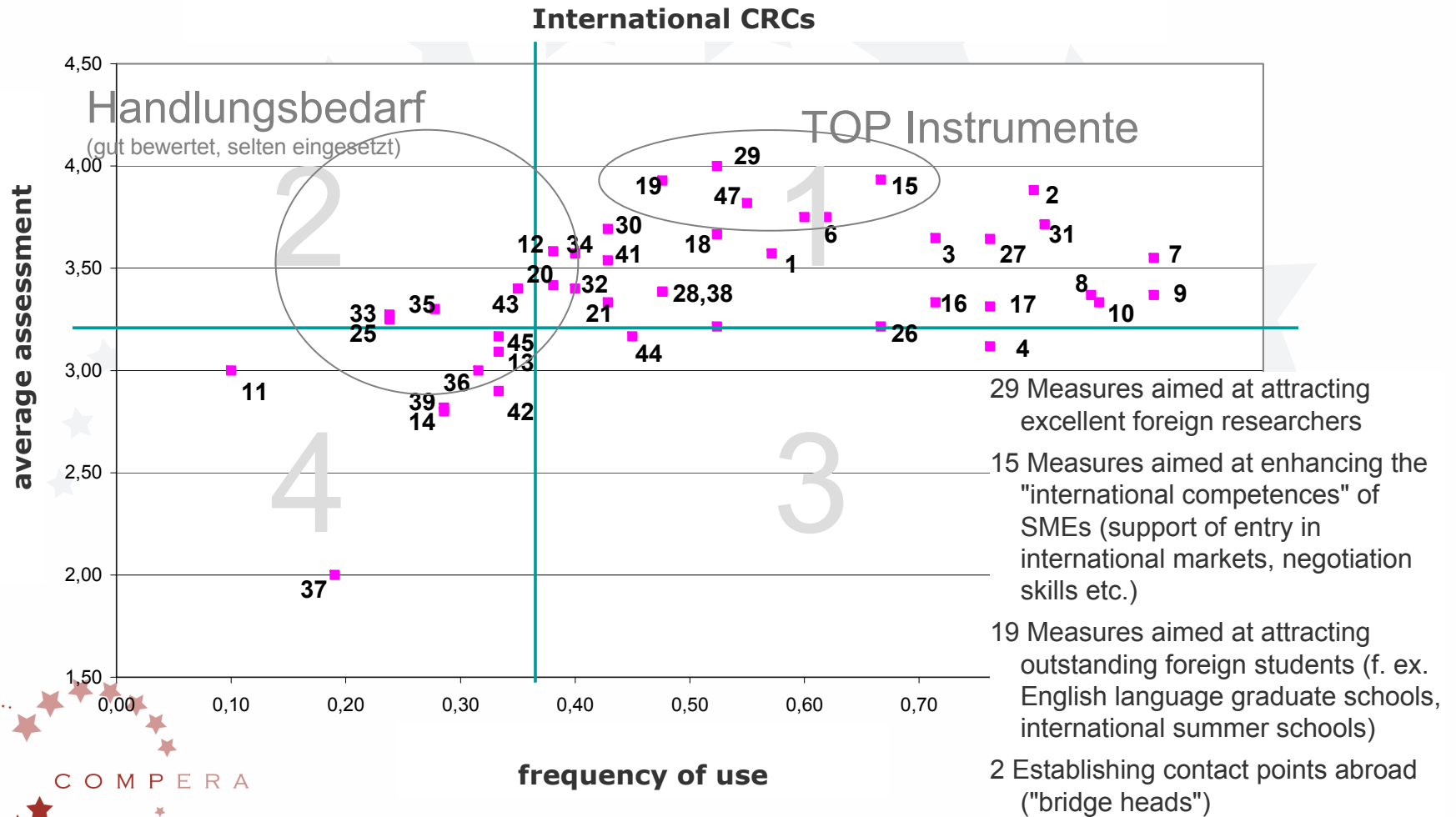
5=most useful to 1=not useful

The Numbers (No.) refer to the number of the particular instrument that is used throughout the study. 17

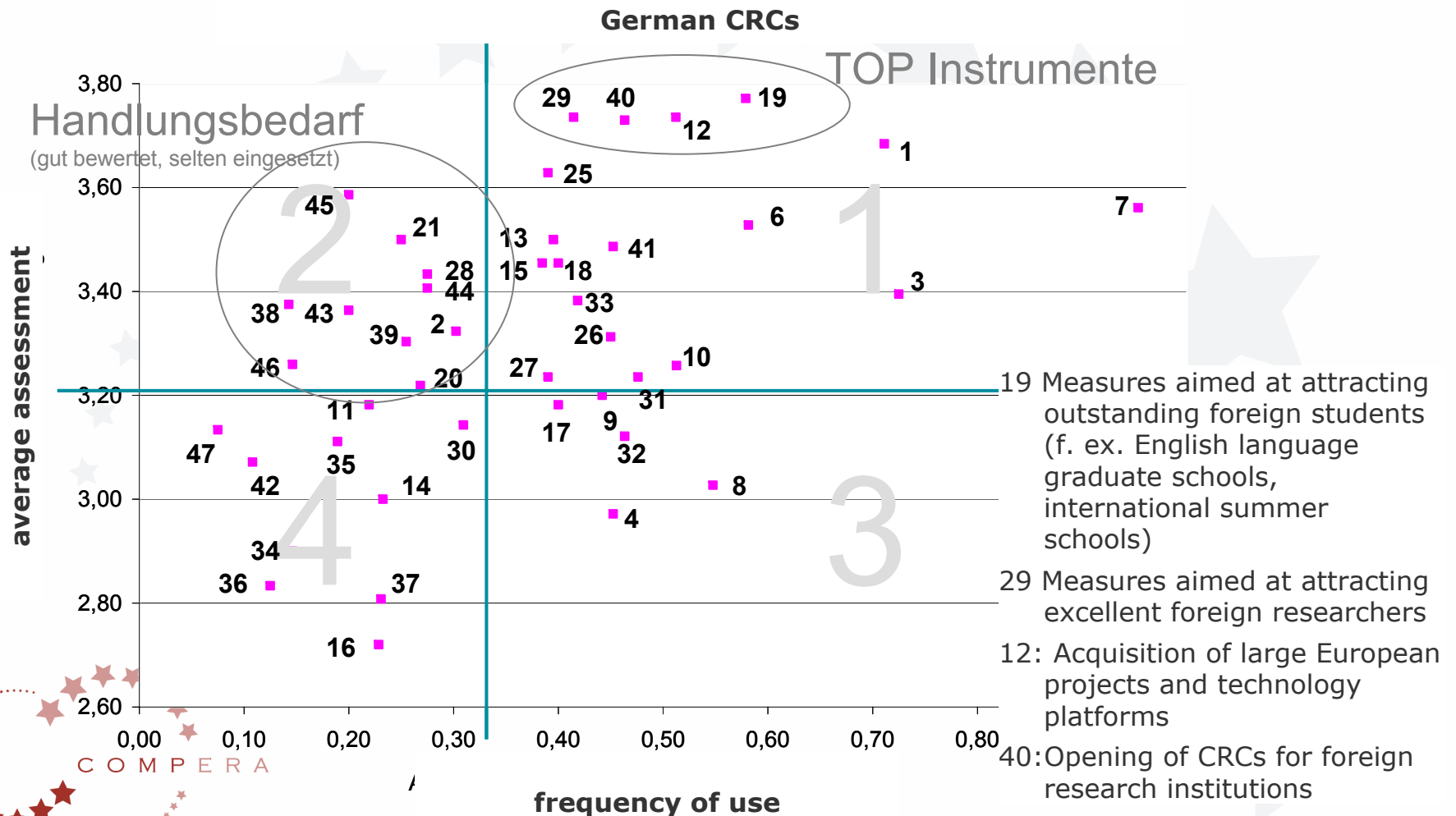
„All“ refers to all international CRCs, „US“ indicates CRCs in US, Canada, Israel, Australia, „EU“ summarises the answers of European CRCs.

The answers of the German CRCs have been analysed separately and are not part of „all“.

Top-Instruments (well assessed and often used; 1) and need for action (well assessed but rarely used; 2) – international CRCs



Top-Instruments (well assessed and often used; 1) and need for action (well assessed but rarely used; 2) – German CRCs



Need for action – German CRCs

- human resources und international (management) competencies
- alignment and opening of programmes
- investment in internationally attractive (research) infrastructure and joint use of infrastructure
- bridge heads abroad
- internationally attractive public support in the field of foreign investment



Need for action – international CRCs

- The attraction of excellent researchers is of outstanding importance – worldwide.
- The acquisition of international research funding (EU, World Bank etc.) and the participation in international projects needs to be intensified.
- International Venture Capitalists play a key role in the formation of international linkages.
- It is an outstanding aim of Asian location to „enter“ Western networks.



Part 3: Internationalisation strategies

- At most locations, there is no single actor who is responsible for international activities. Thus, joint strategies have to be developed.
- Accordingly 59% of German actors, 57 of COMPERA partners and 75% of international CRCs indicated that they have a joint internationalisation strategy.
- Quite often, these strategies are rather implicit and no strategy paper is available. Possible elements include:
 - Definition of aims and criteria (examples: VINNOVA, COMET).
 - Prioritisation of topics and regions.
 - Benchmarking activities.





Conclusions



Types of international „competence nodes“

„The average region in Europe is less specialised than the average region in the U.S., with a lower share of employment accounted for by a region's strong clusters.“ (EU High Level Advisory Group on Clusters)

Bundling of development and production capacities in comparatively young **Research Parks** with highly dynamic growth and efficient organisation structures.

„Asian model“

Research-oriented CRCs; often rather small; covers very specific topic
(↔ „High-Tech-Cluster“)

„European model“

Established cluster, long history, strong economic basis

„US-model“



Two perspectives on internationalisation processes

cooperative model:

- complementarities
- cooperation
- mutual learning

- model for EU research policy
- perspective of researchers
- „Open Model of Innovation“



competitive model:

- regional profiles
- competition for the best brains
- protection of IPR

- perspective of enterprises and locations
- IP as “second currency”



Opportunities of the international embeddedness of CRCs

- The perception of opportunities and threats largely depends on your perspective
- The better you know your strengths, the more you will be able to take your chances.
- The biggest chance of international embeddedness is competence gain.
- Competence is precondition for investment. Attractive support packages (tax holidays etc.) will only work if competence-basis is ensured.



Potential threats – open questions

- Is the „Open Model of Innovation“ a means for the attraction of international enterprises? (IMEC model vs. Dresden model)
- Does the participation in international research projects lead to loss of knowledge (transparency problem) in these projects)?
- Is it mainly “the others” who are learning in international cooperation?
- Will internationalisation activities contribute to the permanent moving away of excellent researchers (brain drain instead of brain circulation)?



Fields of activity for CRCs

- systematic mapping of own strengths and weaknesses
- cross-border partnerships
- bridge-heads abroad
- measures aimed at attracting human capital
- active role in international initiatives/organisations as a preparatory step to cooperation in projects
- acquisition of international projects



Fields of activity: public actors

Research and economic policy with a specific focus on international research locations.

framework conditions facilitating the formation of regional profiles

- EU competitions policy
- immigration law
- research and investment funding
- ...

existing instruments

- regional policy:
„strengthening
strengths“
- earmarking research
(and investment)
funding for CRCs?
- Integration of CRC in
location marketing and
investment promotion
activities
-

specific programmes and initiatives

- funding of network
management
- support of bottom-up
processes
-

