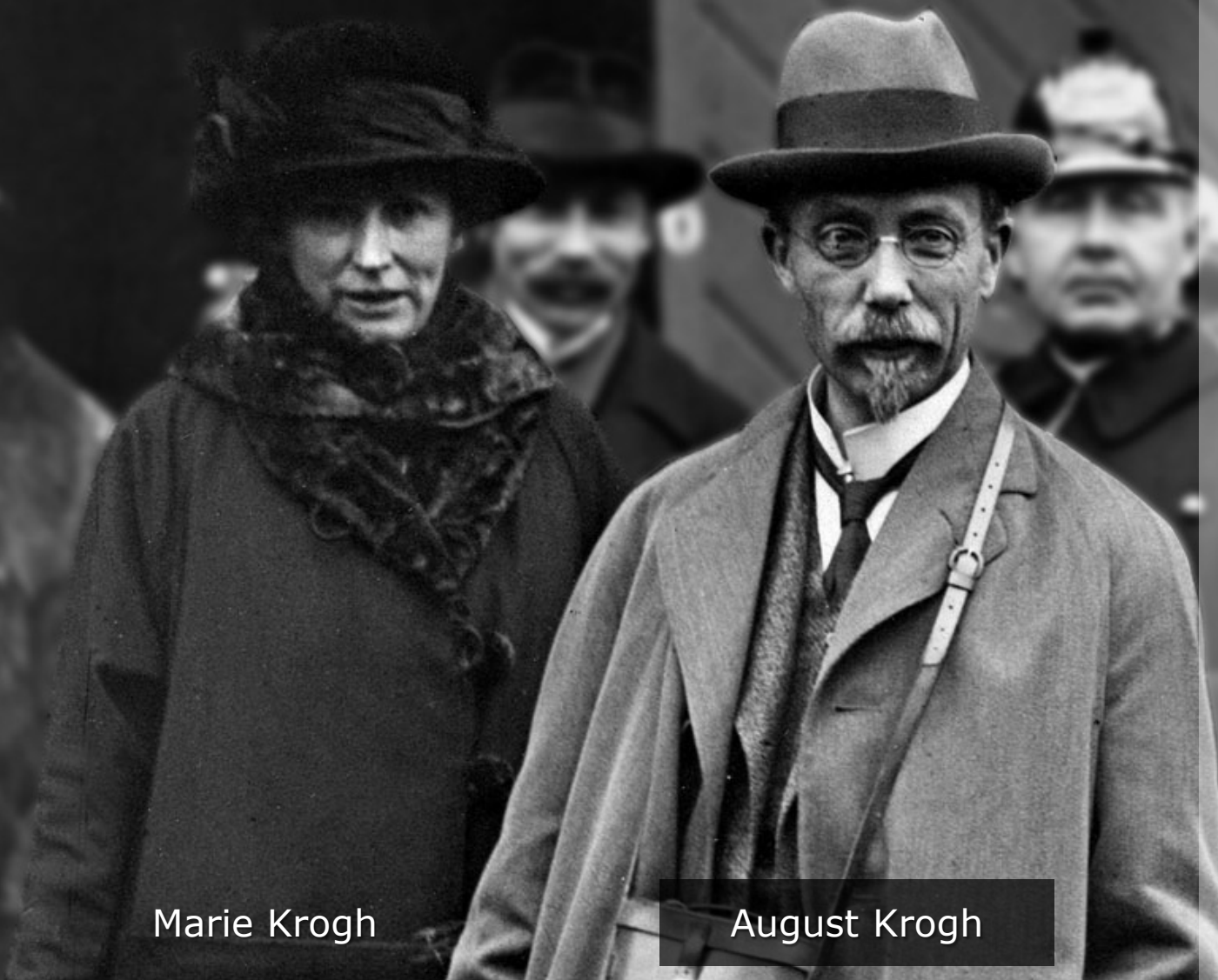




Novo Nordisk Fonden & Impact Assessment

Thomas Alslev Christensen, Head of Operations
Presentation, UFM
March 31, 2016

IT BEGAN WITH INSULIN



Marie Krogh

August Krogh



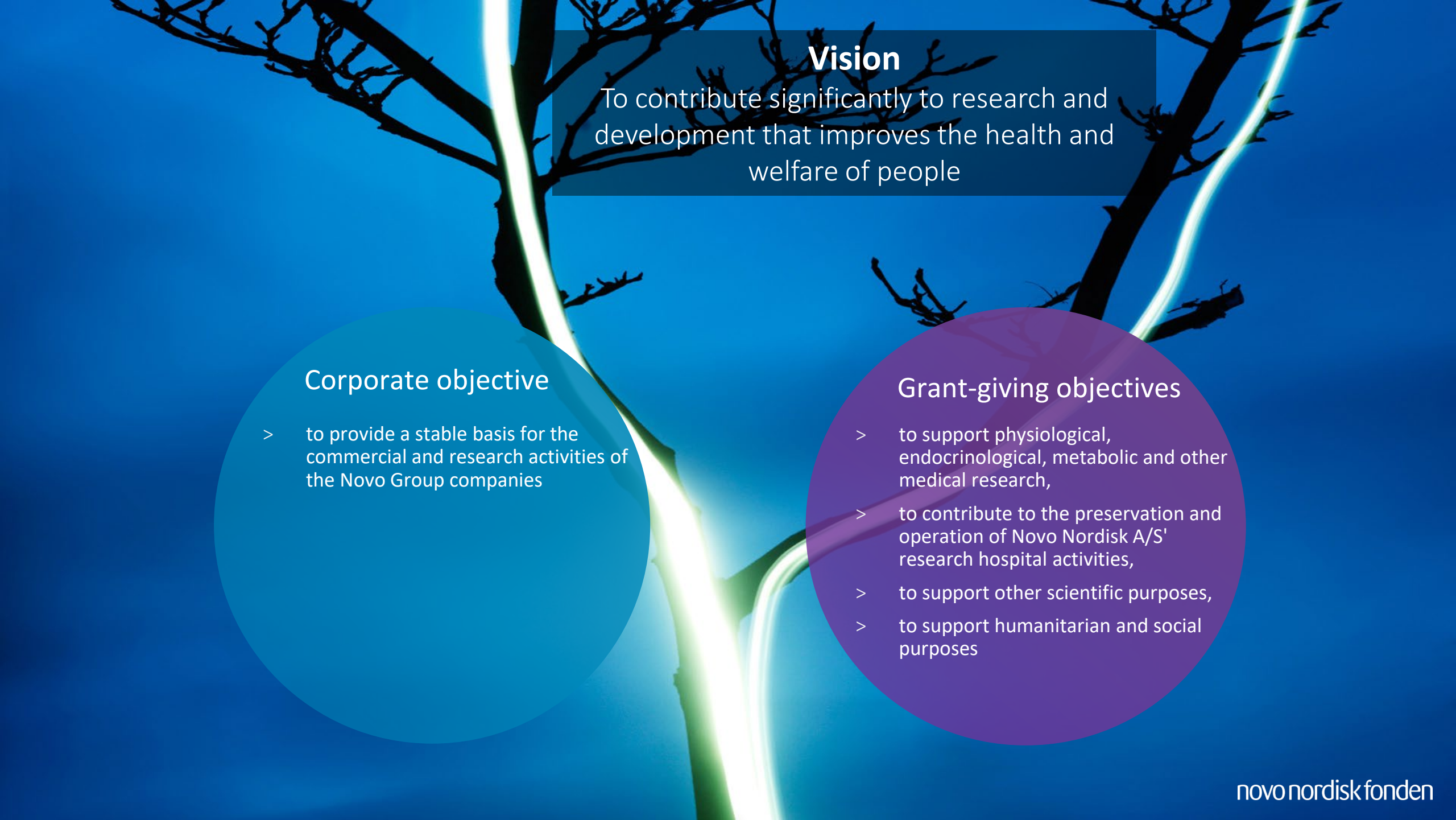
Pedersen brothers



H.C. Hagedorn



August Kongsted



Vision

To contribute significantly to research and development that improves the health and welfare of people

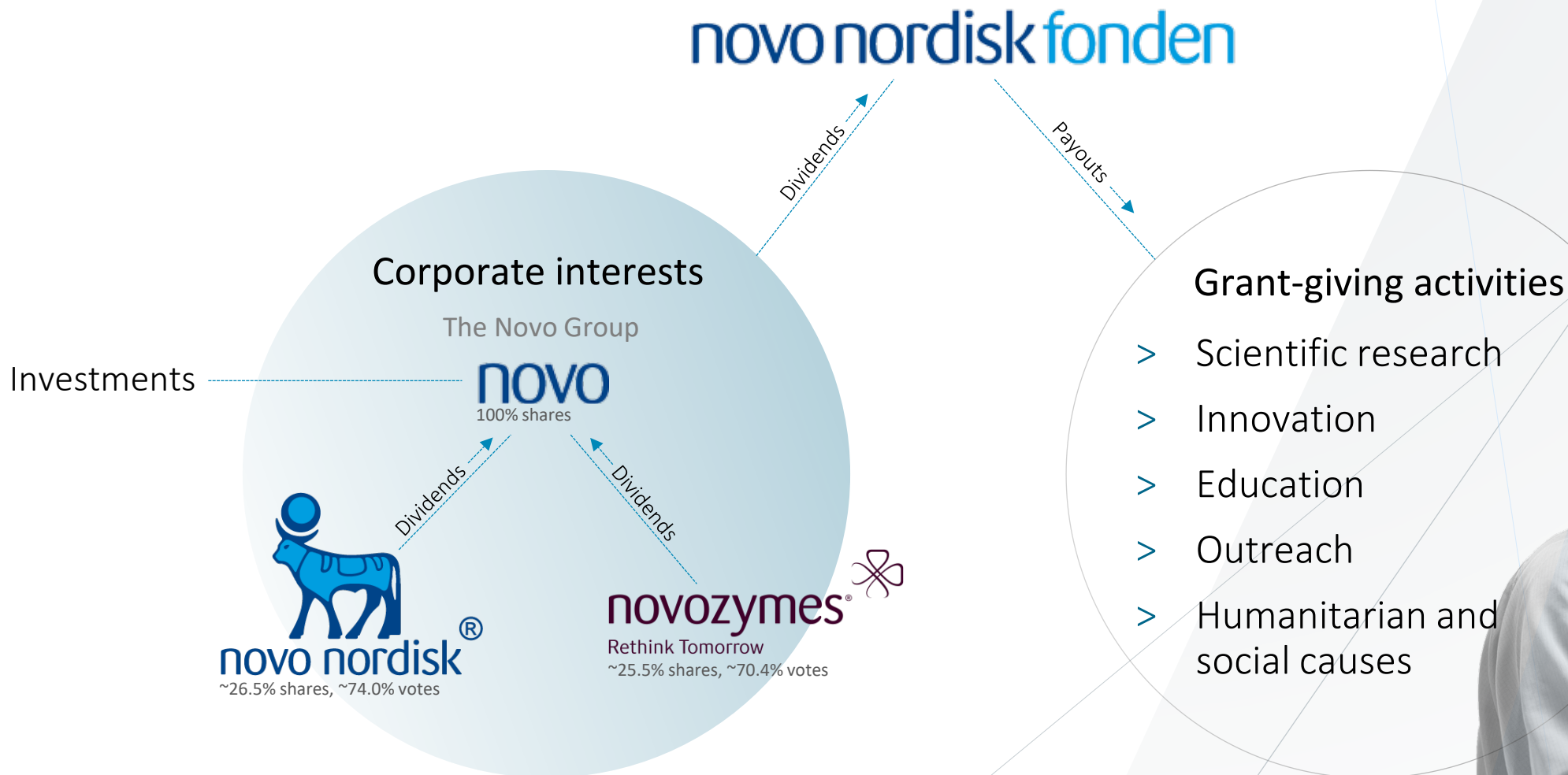
Corporate objective

- > to provide a stable basis for the commercial and research activities of the Novo Group companies

Grant-giving objectives

- > to support physiological, endocrinological, metabolic and other medical research,
- > to contribute to the preservation and operation of Novo Nordisk A/S' research hospital activities,
- > to support other scientific purposes,
- > to support humanitarian and social purposes

AN INDEPENDENT FOUNDATION WITH CORPORATE INTERESTS



NOVO A/S

INCOME STATEMENT 2015

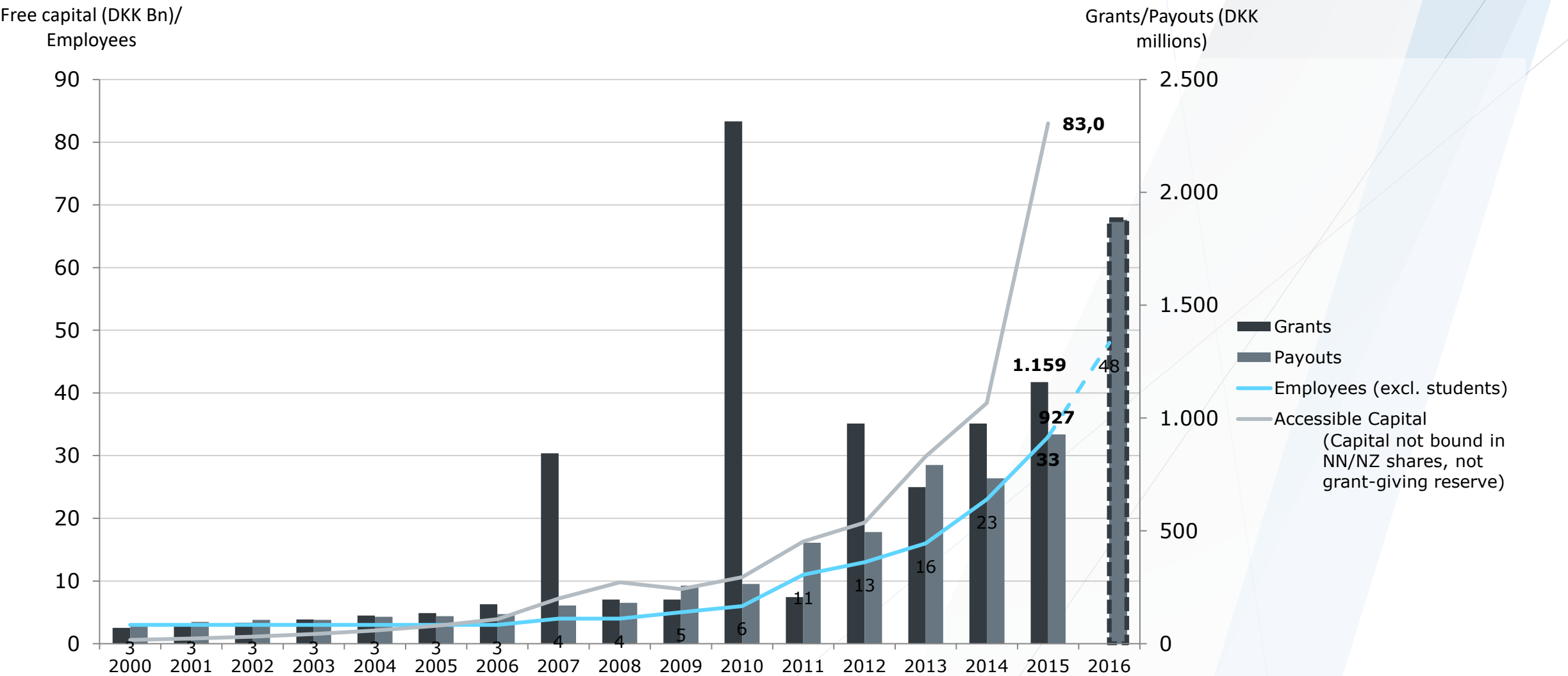


	DKK million
Novo Group:	
Dividends from Novo Group* companies	3,751
Gain from sale of shares in Novo Group* companies	520
Novo Group total:	4,271
Life-science investments (dividends and share price appreciation):	
- Large Investments	6,577
- Novo Ventures	1,959
- Novo Seeds	56
Life-science total:	8,592
Financial investments:	
Financial investments total	2,895

*Novo Group: Novo Nordisk A/S, Novozymes A/S and NNIT A/S

DEVELOPMENT

GRANTS, PAYOUTS, UNBOUND CAPITAL AND EMPLOYEES



IT STARTS WITH A STRATEGY

- Developed 2013
- Implemented 2014
- Running till 2018



Sten
Scheibye
(Chair)



Steen
Riisgaard
(Vice Chair)



Bo Ahrén



Karsten
Dybvad



Lars
Fugger



Marianne
Philip



Anne Marie
Kverneland



Lars Bo
Kjøppler



Karen
Lauberg
Lauritsen

Societal goal

1

Corporate goals

1

2

3

Grant-giving goals

1

2

3

4

5

6

SOCIETAL GOAL

Develop a knowledge-based society with Denmark as the Foundation's centre of gravity

With Denmark as the Foundation's centre of gravity the prime focus is:

- To promote world-class research and innovation in the medical, biotechnological and natural sciences and help to foster a world-class education system.
- To help to develop a knowledge-based society that contributes to long-term economic activity and job creation for improving general health and welfare.

Strategic goals for the Novo Nordisk Foundation

CORPORATE GOALS

Be a strong owner of
the companies in the
Novo Group

Generate attractive
investment returns
to the Foundation
on its financial
investment portfolio

Make investments
with the main goals
of promoting
knowledge and world
class research

Strategic goals for the Novo Nordisk Foundation

GRANT-GIVING GOALS

Strengthen
biomedical and
biotechnology
research in selected
fields

Advance individual
scientific excellence

Fuel cross-
disciplinarity

Spur imagination,
inspiration and
knowledge about
science and
technology

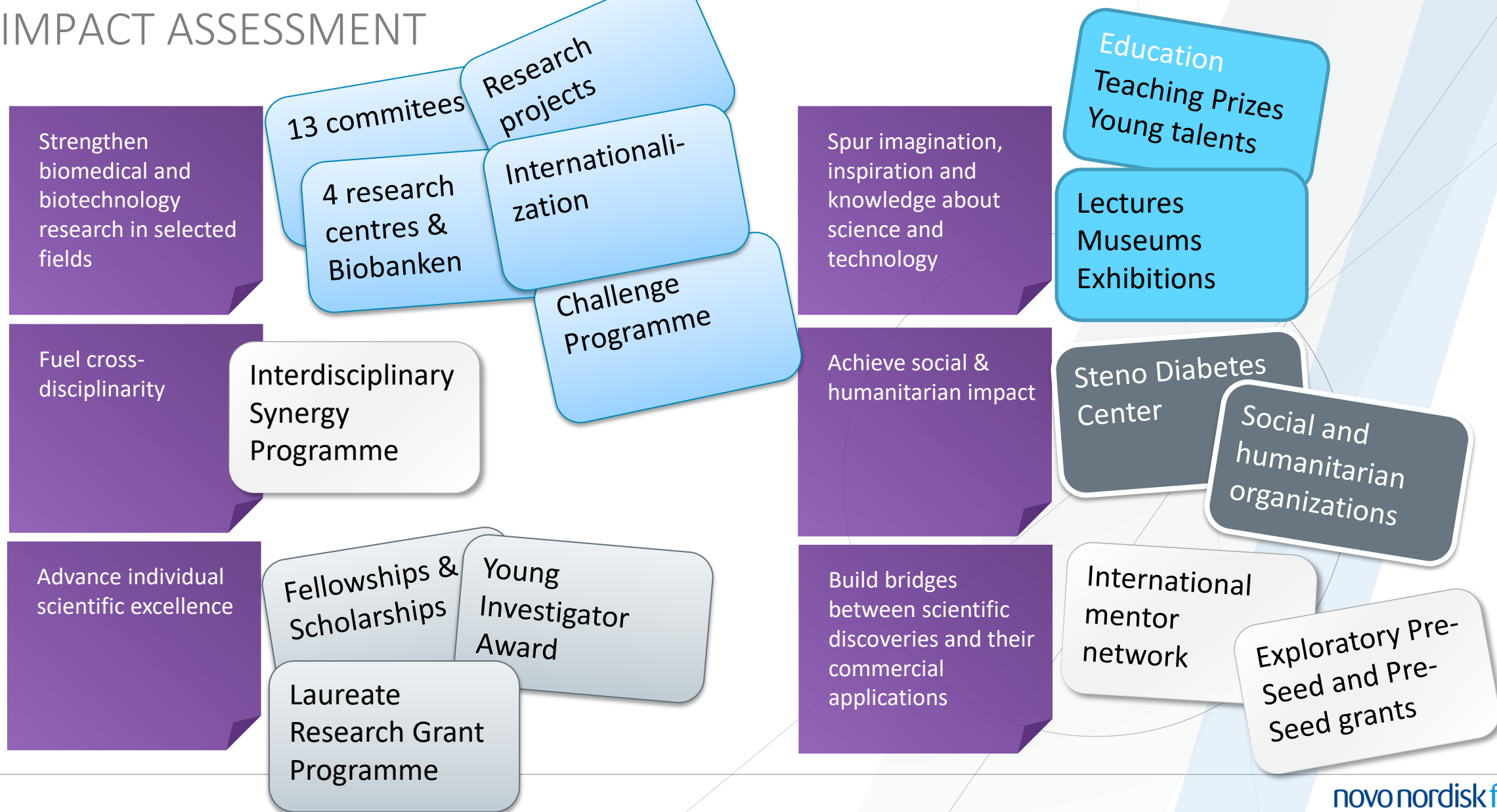
Build bridges
between scientific
discoveries and their
commercial
applications

Achieve social &
humanitarian impact

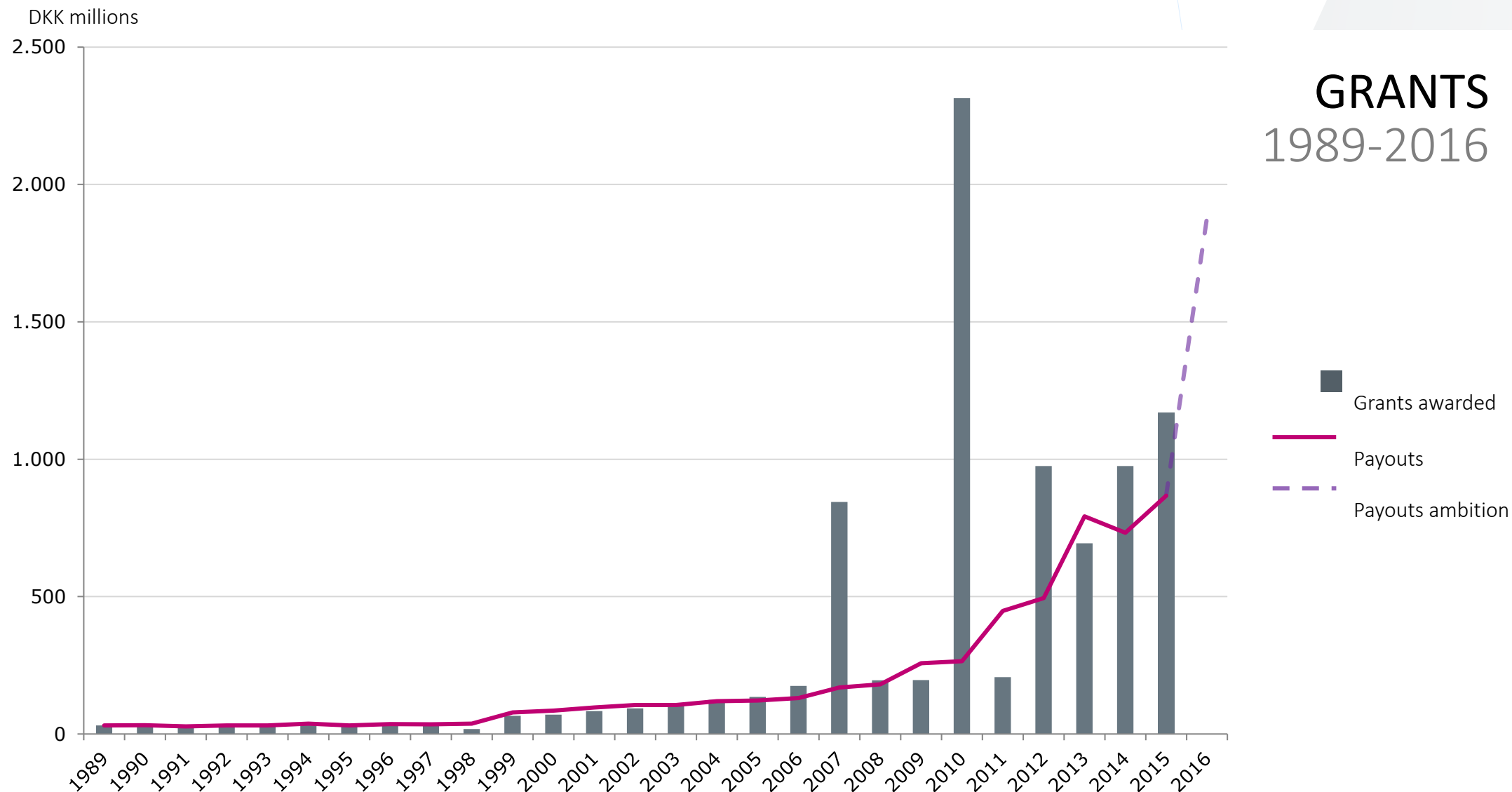
Strategic goals for the Novo Nordisk Foundation

STRATEGIC GOALS AND INSTRUMENTS

IMPACT ASSESSMENT



GRANTS 1989-2016

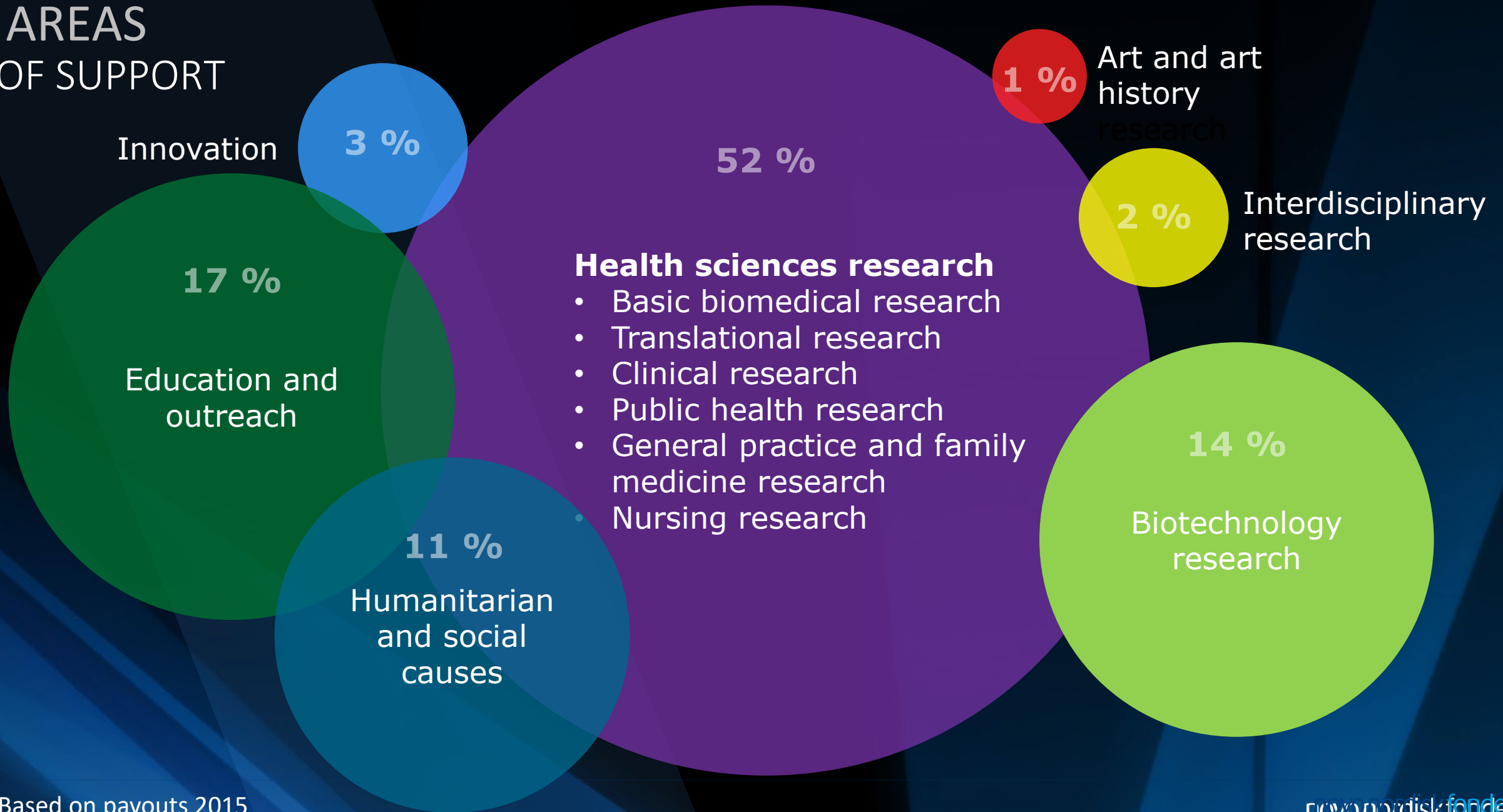


Only small project grants in open competition

Strategic thinking introduced

Strategic thematic grants implemented

AREAS OF SUPPORT





FOUR GRANT CATEGORIES

Research and Innovation Grants

Grants awarded in
open competition

Strategic Awards

Research Centre
Cluster.
Standalone Grants:
Research, Education,
Social and Outreach.

Social and humanitarian causes

Humanitarian
organizations and
research into the
effects of donations.

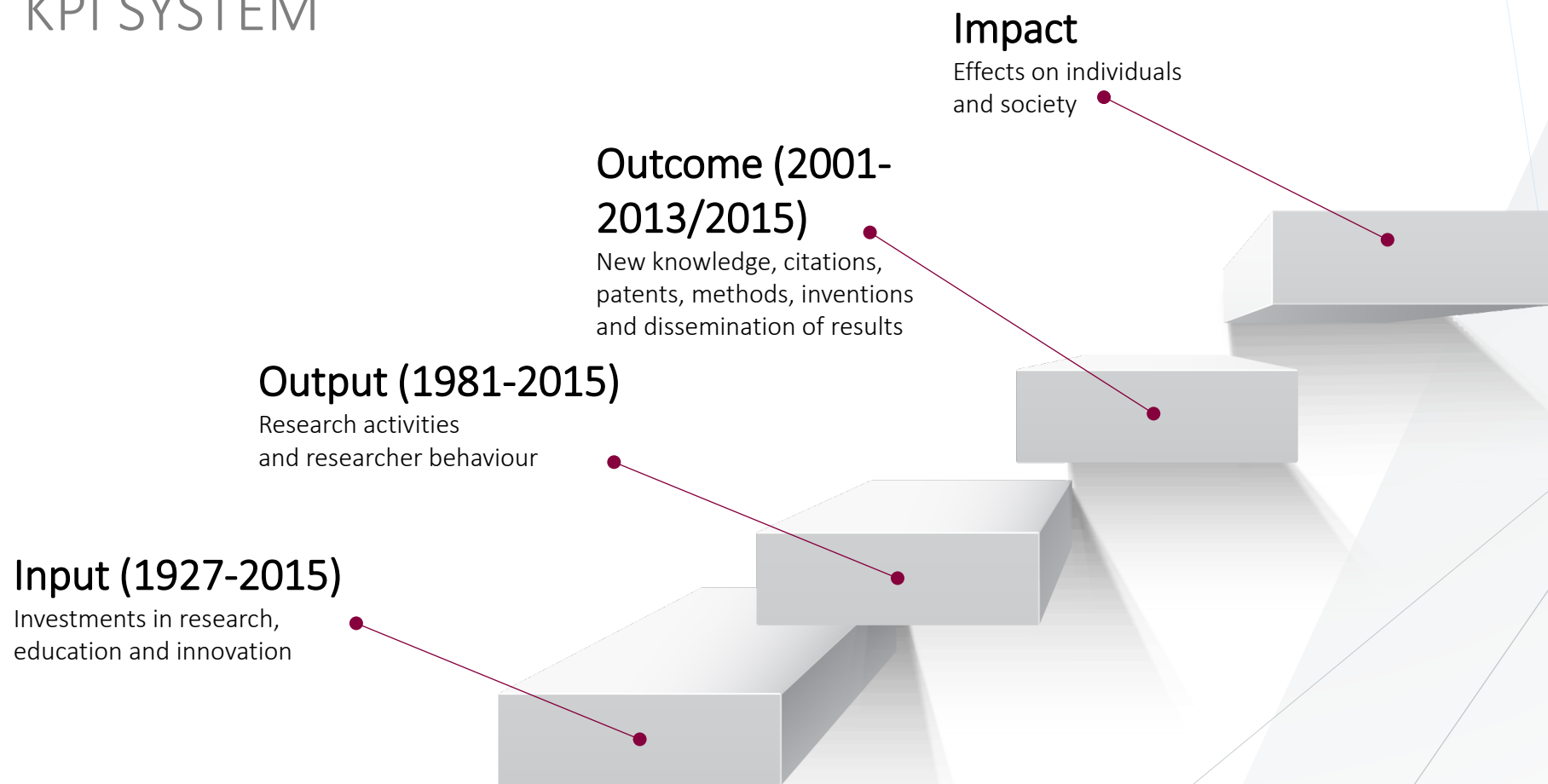
Steno Grants

Steno Diabetes Center

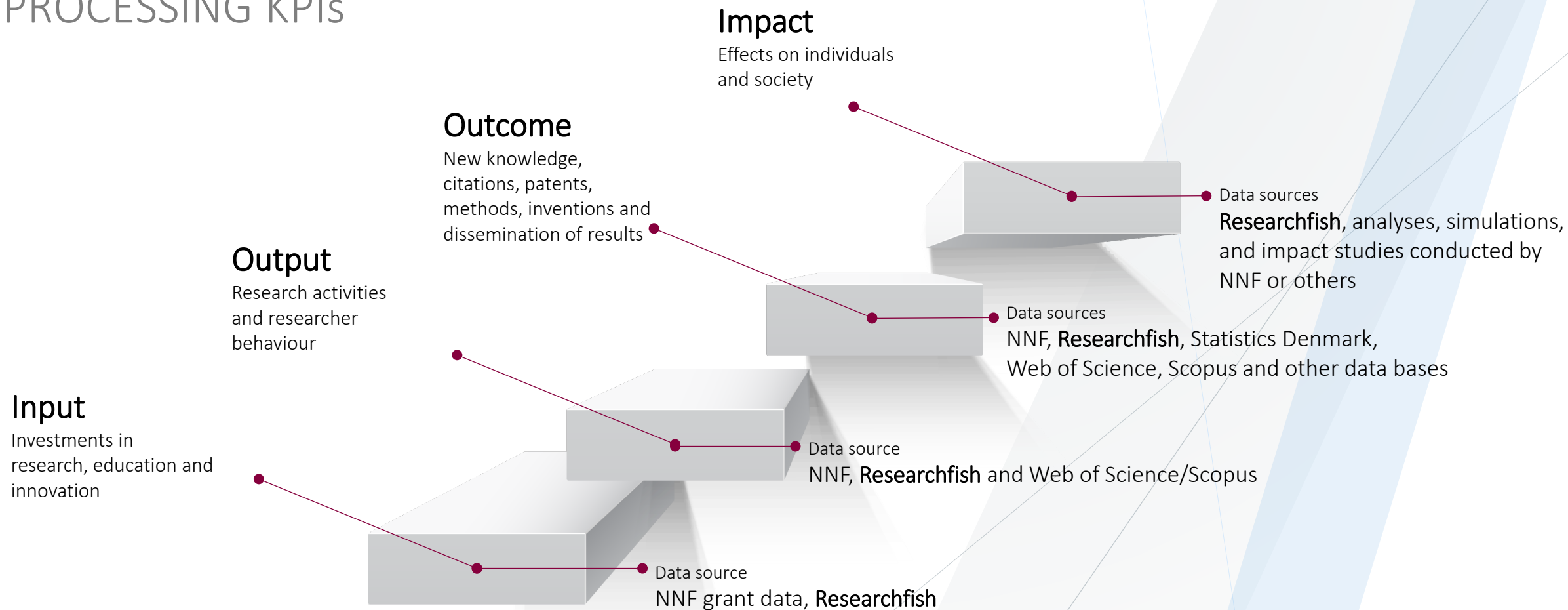
HISTORY OF FUNDING

- 11,000 grants from 1927-2015
- DKK 10.4 billion from 1927-2015
 - DKK 6.5 billion from 2010-2015
 - DKK 1,2 billion in 2015
 - Grant budget in 2016: DKK 8.8 billion

EFFECTS KPI SYSTEM

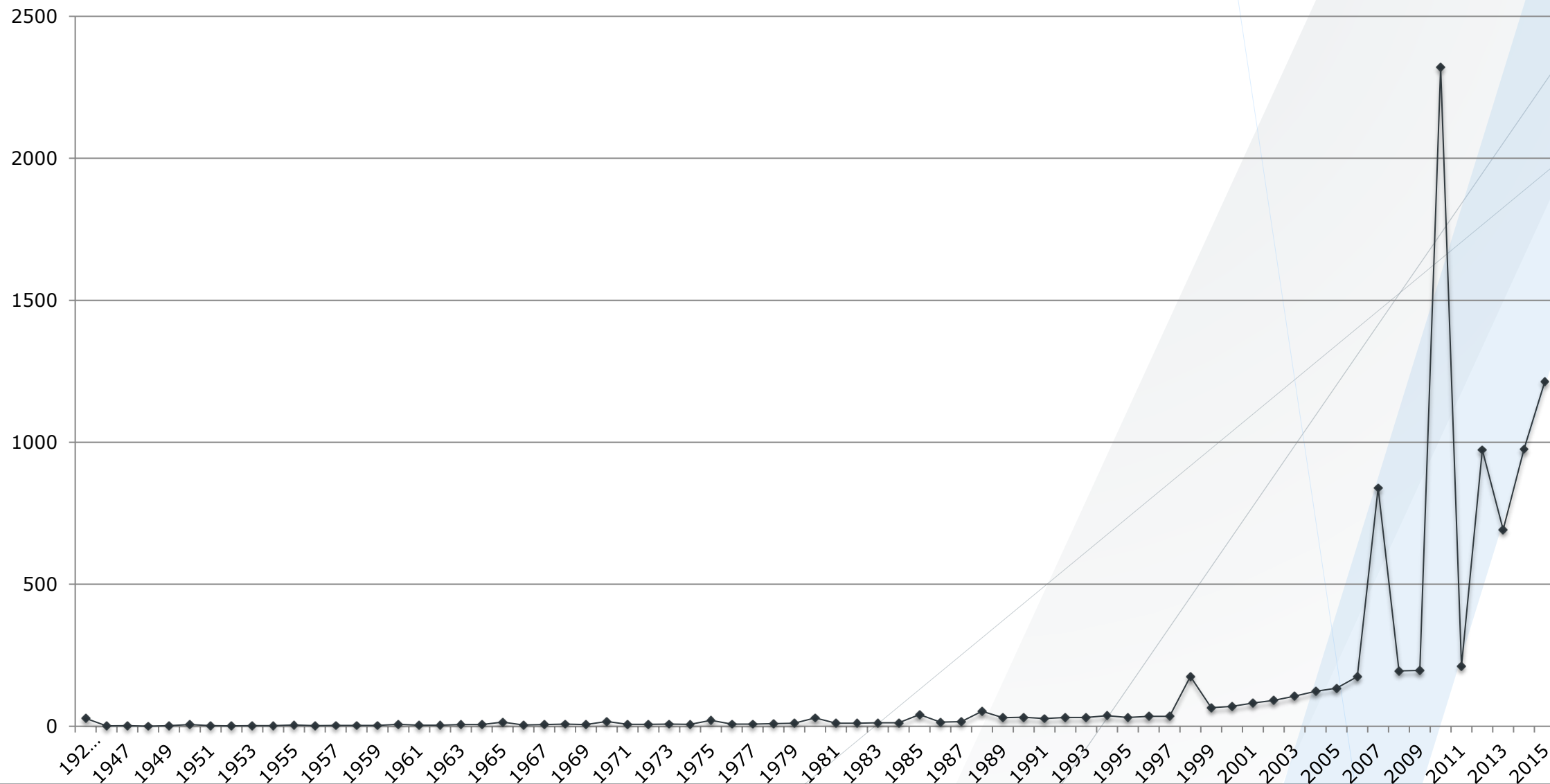


EFFECTS & DATA PROCESSING KPIs



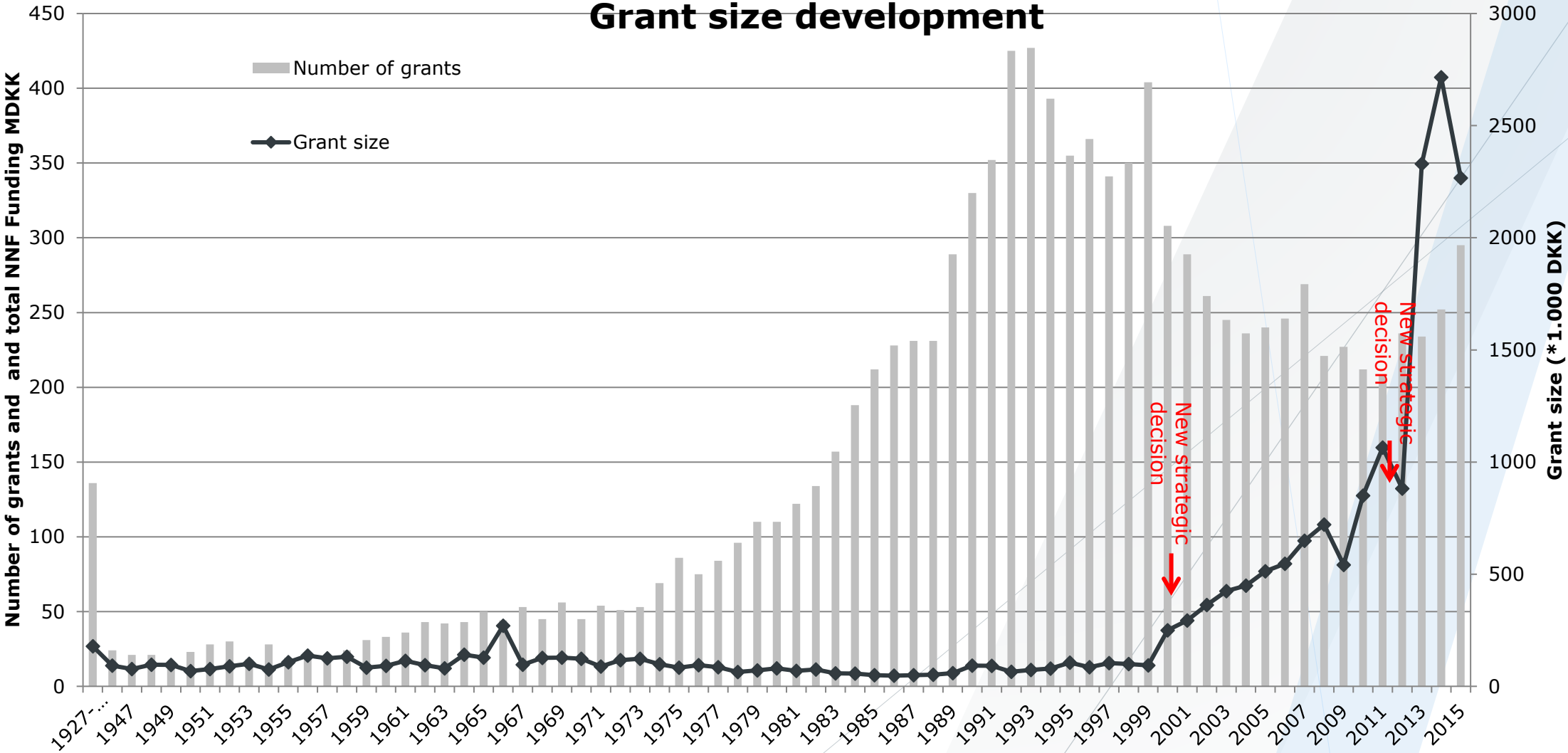
HISTORICAL DEVELOPMENT IN TOTAL GRANTS 1927-2015

MDKK



HISTORICAL DEVELOPMENT IN GRANTS 1927-2015

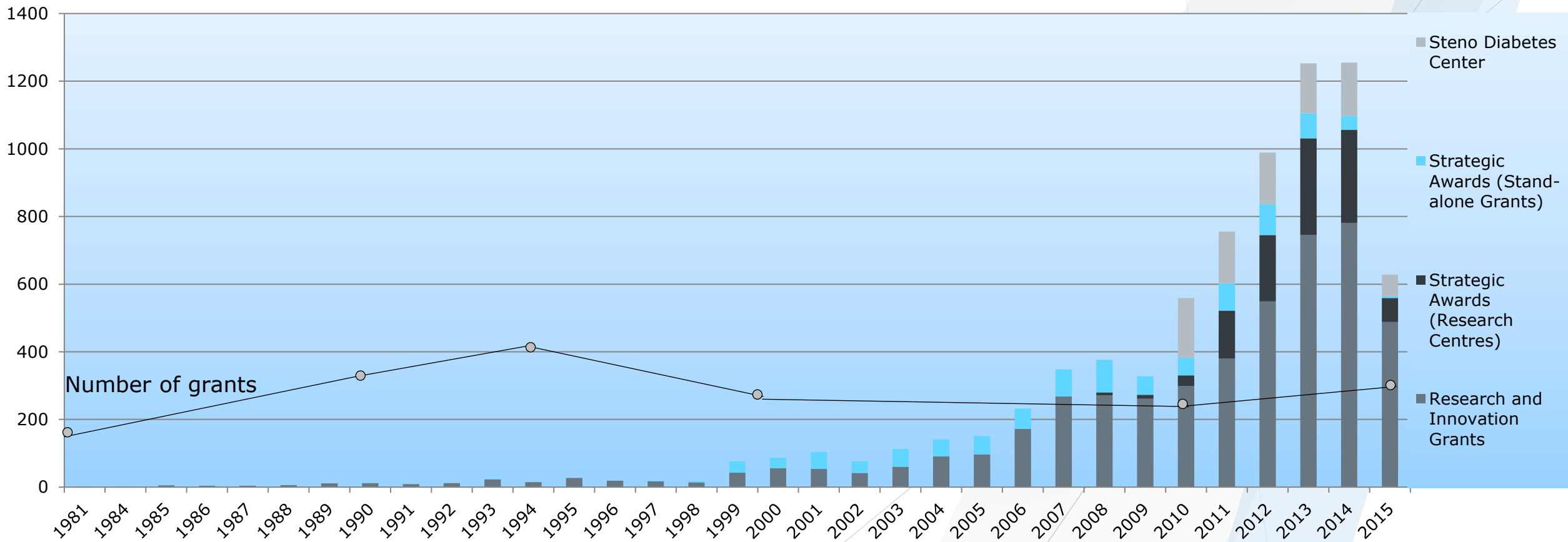
DEVELOPMENT IN GRANT SIZE



First data collection in Researchfish

	All instruments
Number of grant reports in Researchfish	398
Publications	2125
Further Funding	379
Engagement Activities	407
Collaborations and Partnerships	319
Awards and Recognition	193
Research Tools & Methods	163
Other Outputs	153
Next Destination	68
Intellectual Property & Licensing	22
Use of Facilities & Resources	53
Research Databases and Models	34
Influence on Policy	40
Medical Products, Interventions and Clinical Trials	29
Artistic & Creative Products	30
Software & Technical Products	11
Spin Outs	12
Total	4038
Gns. pr. indrapportering	10,15

PUBLICATIONS REPORTED TO NNF AND NUMBER OG GRANTS 1980-2015



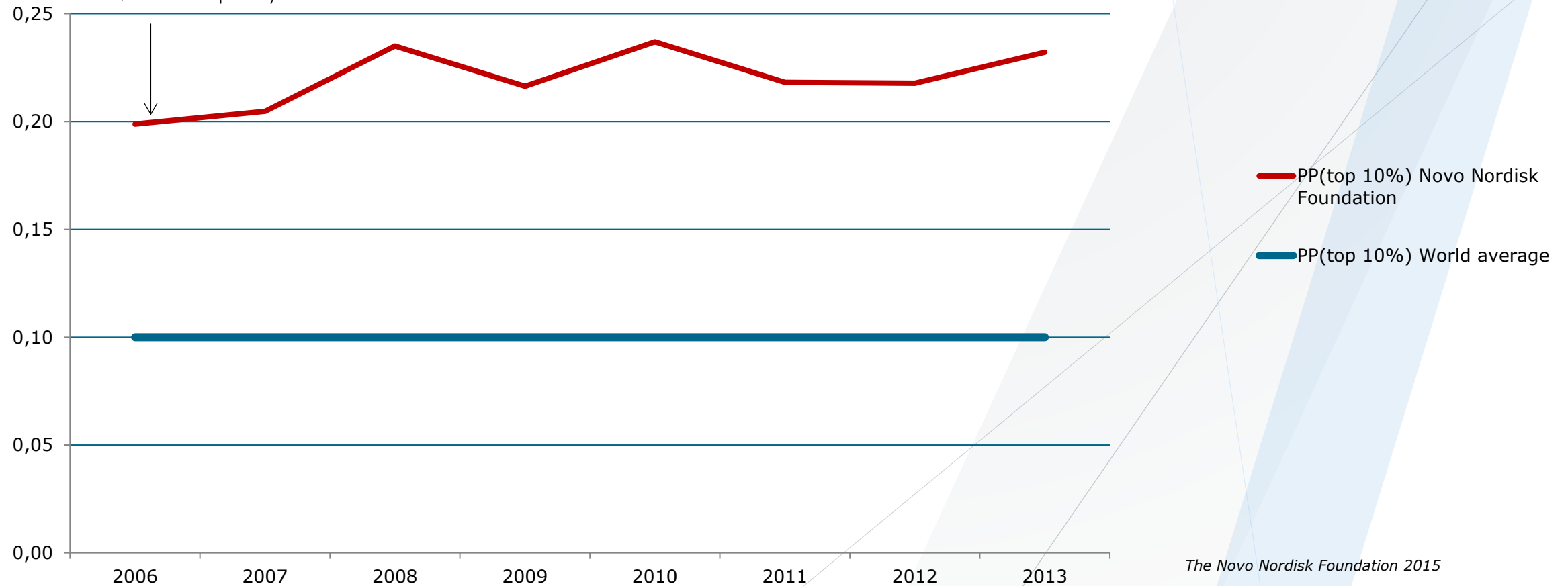
IMPACT

PP(TOP 10%)

PP(Top 10%): proportion of top 10% publications.

The proportion of the publications of a group, i.e. university that belong to the **top 10% most frequently cited**, compared with other publications in the same field and in the same year.

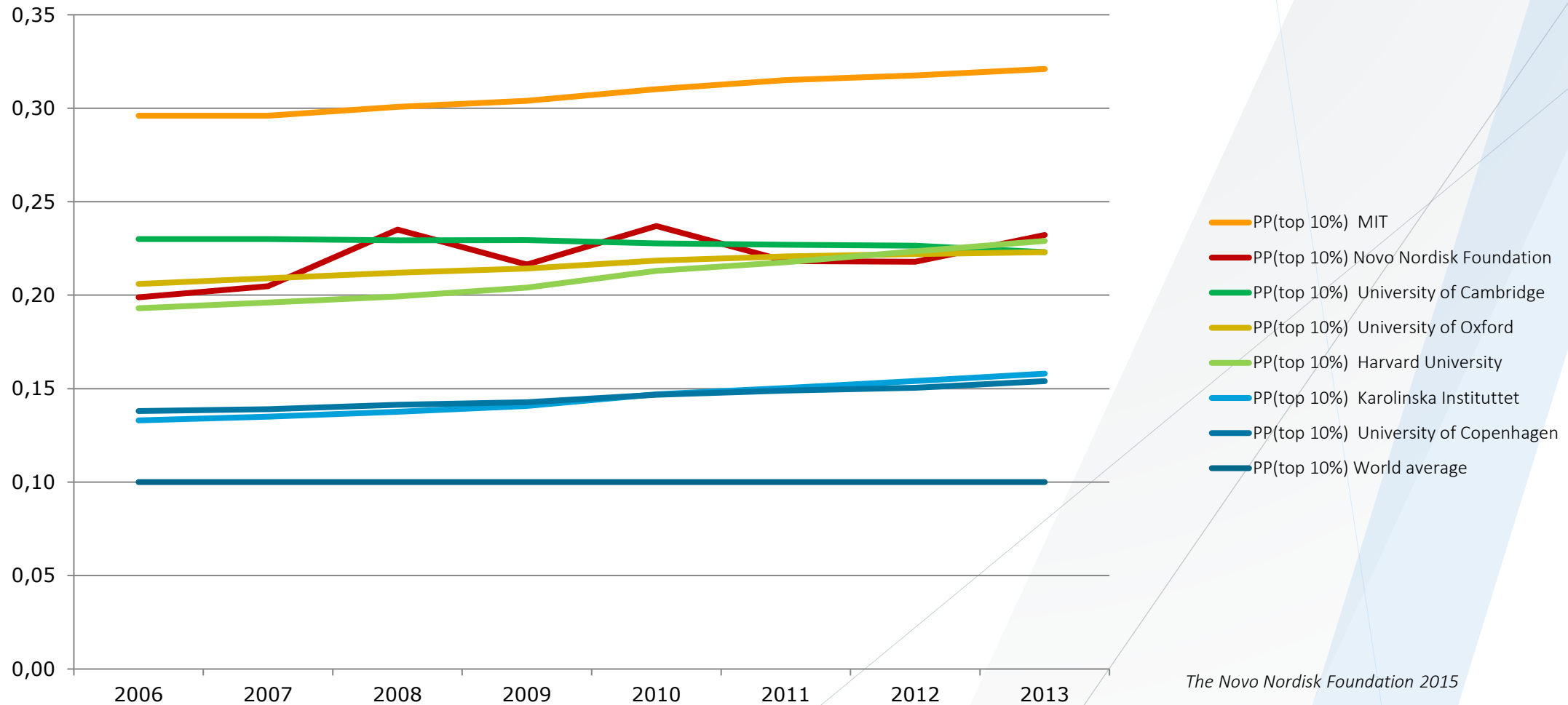
An PP(Top 10%)-value of 0.2 means that 2 out of 10 publications are among the 10 % most frequently cited in the field



The Novo Nordisk Foundation 2015

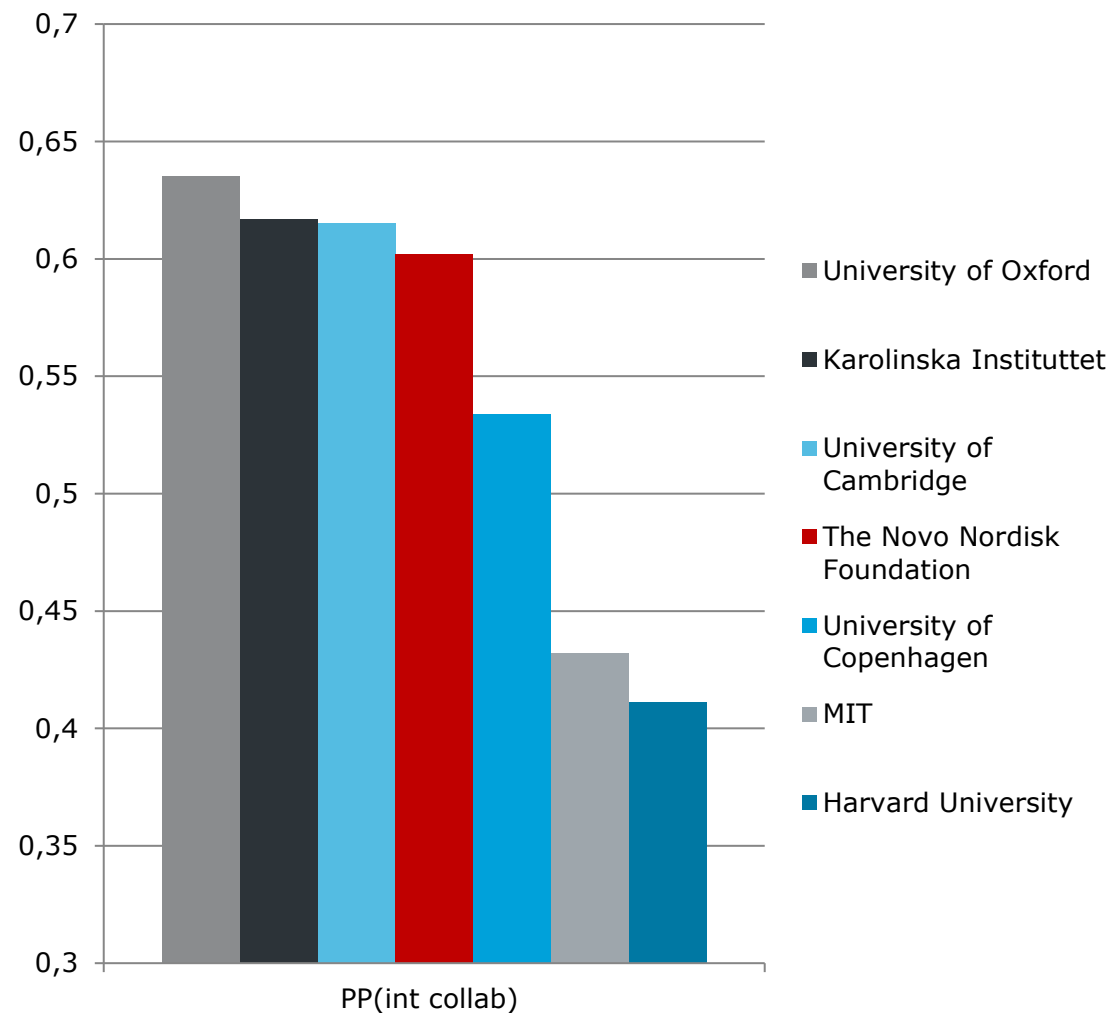
IMPACT BENCHMARKING

Benchmarking: Impact scores are benchmarked against universities using the Biomedicine and Health Sciences category in the Leiden Ranking system (www.leidenranking.com)

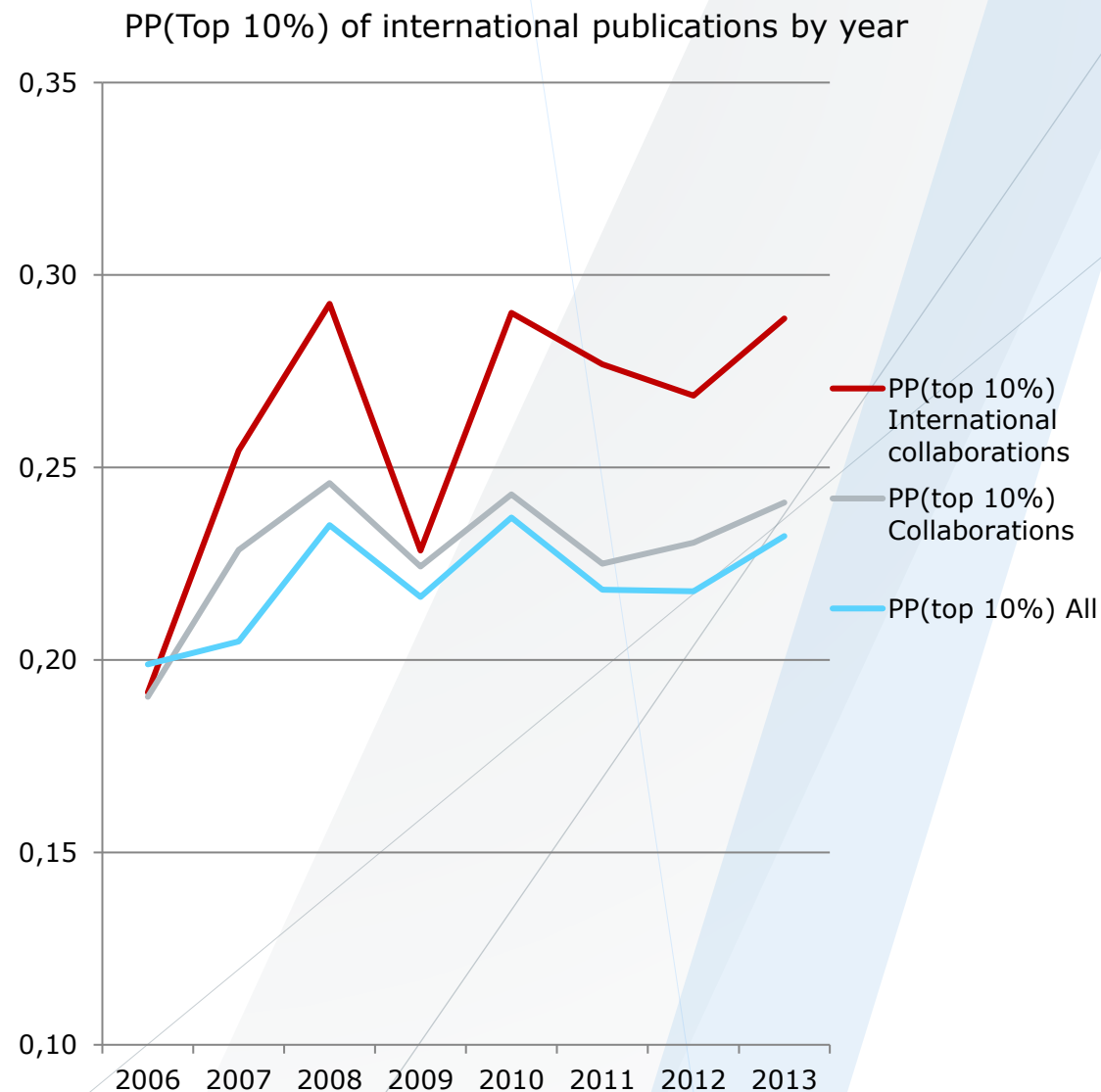


The Novo Nordisk Foundation 2015

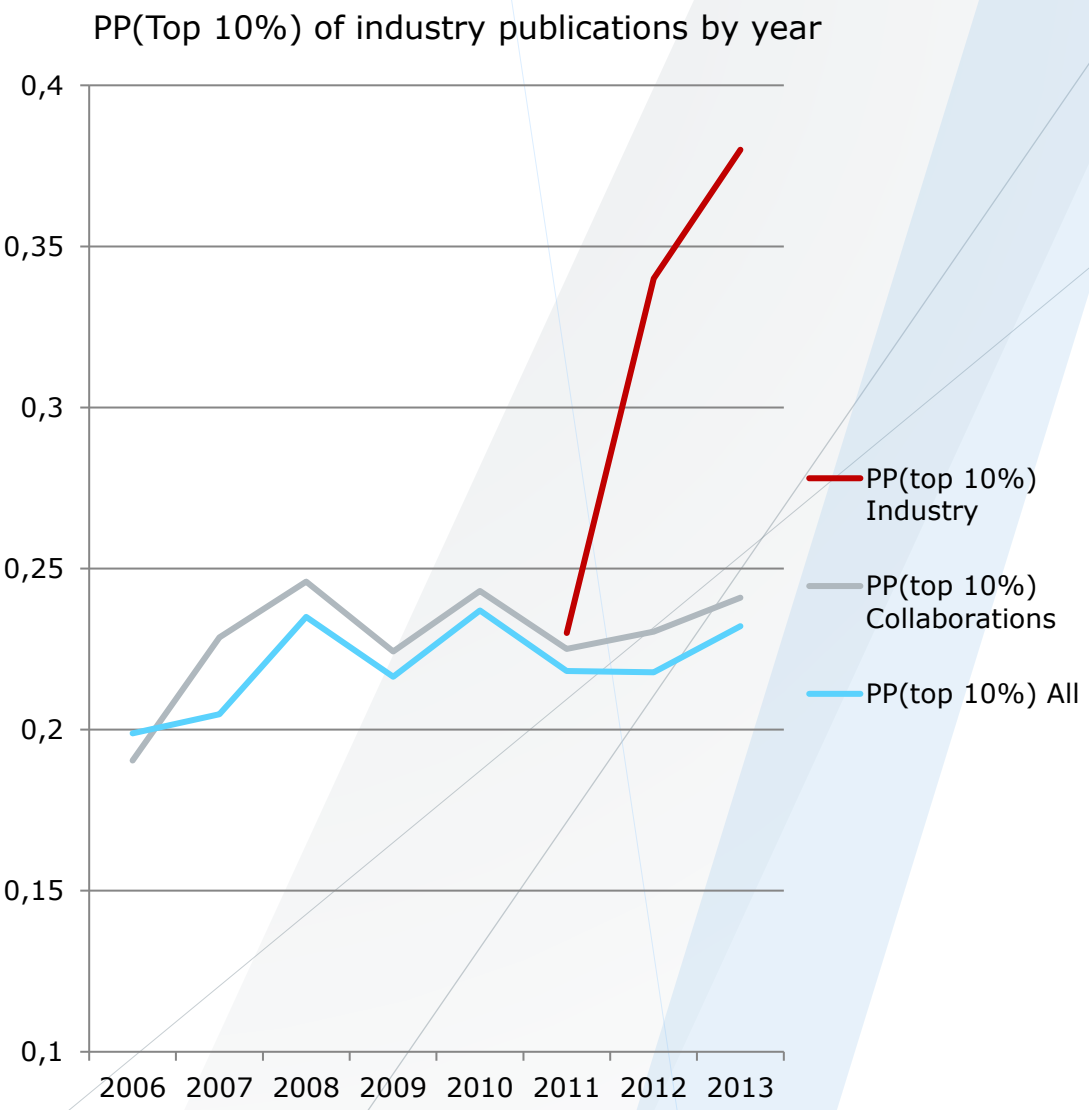
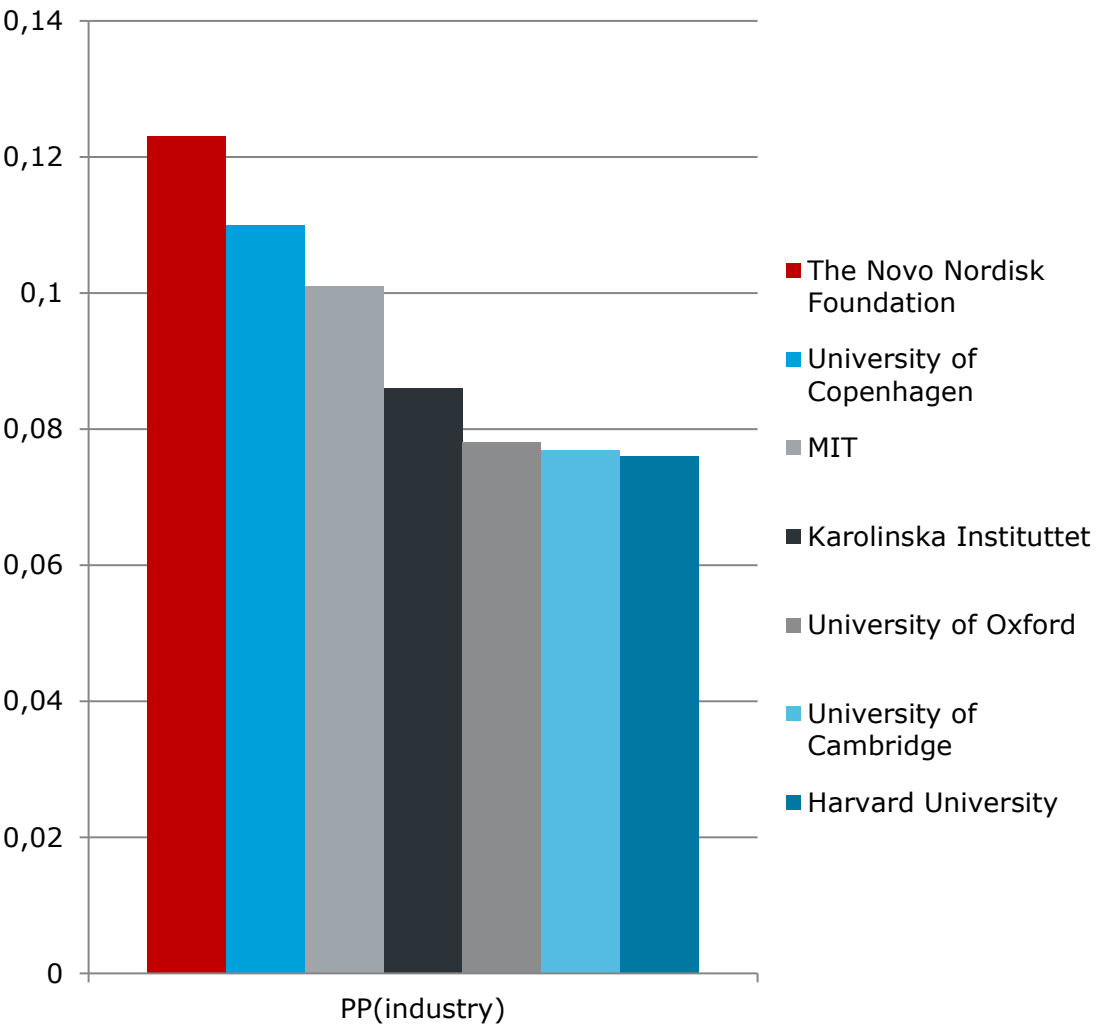
INTERNATIONAL COLLABORATION



PP(int collab): The proportion of a university's publications that have been co-authored by two or more countries



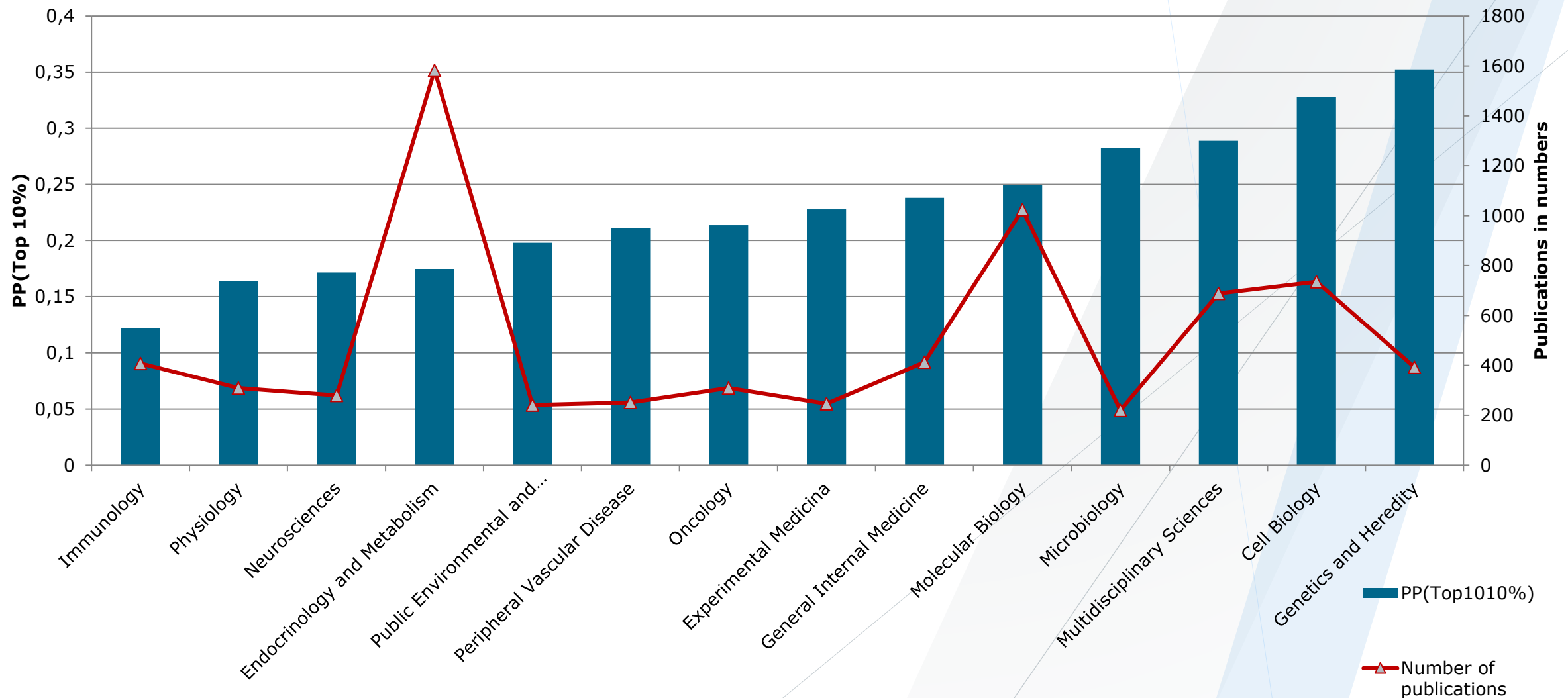
INDUSTRY COLLABORATION



PP(industry): The proportion of a university's publications that have been co-authored with one or more industrial partners

PUBLICATIONS 1981-2013

SCIENTIFIC CATEGORIES (WEB OF SCIENCE CATEGORIES)



Forskningsøkonomi – Samfundsøkonomisk effektanalyse af finansiering af offentlig forskning

TRE ANALYSER

1. Hvordan påvirker finansiering af offentlig forskning privat forskningsfinansiering i life-science virksomheder?
 2. Samfundsøkonomiske effekter af ændrede investeringer i offentlig forskning
 3. Samfundsøkonomiske effekter af tilførsel af forskere fra udlandet
-

1. HVILKEN BETYDNING HAR FINANSIERING AF OFFENTLIG FORSKNING FOR DEN PRIVATE SEKTOR INDEN FOR LIFE-SCIENCE?

- Formål: Belyse spillover-effekter mellem offentlig og privat forskning
- Analyse: Analyse på virksomhedsniveau
 - Step1: Positiv/negativ (kausal) sammenhæng ml. privat og offentlig forsknings finansiering?
 - Step2: Størrelse af effekten?
- Data: Virksomheds- og regnskabsdata fra 2000-2013, 1328 observationer, 408 virksomheder med forskningsaktivitet.

Resultat analyse 1: Vi finder komplementaritet og høj effekt inden for life-science

- Offentlig forskningsfinansiering komplementerer privat forskningsfinansiering på virksomhedsniveau.
- Effekten: 1% stigning af offentlig finansiering af privat forskning vil lede til 0,18-0,39% stigning af private virksomheders egen investeringer i forskning.
 - Resultatet kan omregnes så 1 krone ekstra offentlig finansiering af privat forskning medfører, at private virksomheders egne investeringer i forskning vil øges med yderligere 4,8-10,4 kroner (op til 12 år efter).

Vores studie er i tråd med andre danske og udenlandske studier:

- Bloch og Graversen (2012) dansk studie finder, at 1% stigning af offentlig finansiering af F&U vil lede til 0,08-0,14% stigning på tværs af alle brancher.
- HEGR(2009) britisk studie viser, at £1 ekstra investering i forskning giver en forøgelse på £2-£5 til private investeringer i forskning
- Toole(2007) amerikansk studie viser følgende:
 - at \$1 investering i offentlig grundforskning over 8 år giver en \$8 øget investering i biomedicinindustrien
 - at \$1 investering i offentlig klinisk forskning medfører en \$2 øget investering i biomedicinindustrien over 3 år

2. SAMFUNDSØKONOMISKE EFFEKTER AF ÆNDREDE INVESTERINGER I OFFENTLIG FORSKNING

Formål: Belyse effekten på samfundsøkonomien af øgede tilførsel af forskningsmidler til offentlig forskning

Model: Makroøkonomisk model ADAM (2015-2050)

Tilførsel af ekstra offentlige Forskningsmidler (mia. DKK)	2015	2020
Scenario 1	1,0	2,25
Scenario 2	1,5	3,25
Scenario 3	2,0	4,50

Resultat analyse 2: Positiv betydning for BNP

Effekt på Danmarks produktion (BNP) på kort og lang sigt

	BNP-niveau (mia. kr.)	
Regneeksempler	Efter 5 år	Efter 40 år
Scenario 1 (1 - 2,25 mia. DKK)	2,0	0,9
Scenario 2 (1,5 - 3,25 mia. DKK)	3,4	1,3
Scenario 3 (2 - 4,5 mia. DKK)	4,7	1,8

Resultat analyse 2: Positiv betydning for beskæftigelse

Effekten på beskæftigelsen på kort og lang sigt

	Beskæftigelse (personer per år)	
	Efter 5 år	Efter 10 år
Regneeksempler		
Scenario 1 (1 - 2,25 mia. DKK)	3.227	1.972
Scenario 2 (1,5 - 3,25 mia. DKK)	4.882	2.931
Scenario 3 (2 - 4,5 mia. DKK)	6.794	3.947

3. ØKONOMISKE EFFEKTER AF TILTRÆKNING AF UDENLANDSKE FORSKERE (til styrkelse af offentlig forskning)

Formål: Samfundsøkonomiske konsekvenser af tilføjelse af udenlandske højtuddannede i den offentlige forskningssektor.

Model: DREAM simulationsmodel (holdbarhed i økonomien på lang sigt)

Hvad gør vi:

Sammenligner DREAMs grundforløb med vores eksperiment (årlig tilførsel af 200 forskere + 200 ægtefæller indtil 2050)

Resultat analyse 3: Udenlandske forskere gavner dansk økonomi (på lang sigt)

- Statens primære balance forbedres med DKK 2,94 mia (2014-priser)

Holdbarhedsindikatoren

	<u>Holdbarheden</u>		<u>Ændring ift. grundforløbet</u>	
Grundforløb	0.31	%		
	5.89	DKK mia.		
Eksperiment	0.46	%	0.15	%
	8.83	DKK mia.	2.94	DKK mia.

Kronebeløbende angiver holdbarhedsindikatoren omregnet til en permanent årlig ændring i den primære saldo opgjort i 2014-niveau.

Resultater i 2050

- Arbejdsudbud og beskæftigelse stiger med 0,39%.
- Befolkningen vokser med 16.000 personer.
- Private investeringer stiger 0,22%
- Det private forbrug stiger 0,52%.
- BNP øges 0,5%.

Hovedbudskabet i de tre analyser

- Offentlige investeringer til forskning fremmer privat forskning.
- På makroniveau findes positive effekter af øgede offentlige investeringer i forskning.
- Tilførsel af udenlandske forskere til den offentlige sektor gavner dansk økonomi

MEN VI MANGLER STADIG MEGEN VIDEN OG MODELLERNE BØR UDBYGGES

NYT VIRKEMIDDEL:

”SAMFUNDSVIDENSKABELIGT FORSKNINGSPROGRAM

INDEN FOR SAMFUNDSØKONOMISKE EFFEKTER AF FORSKNING I DANMARK”

- **Formål:** Styrke evidensbaseret viden om de samfundsøkonomiske effekter af investeringer i forskning.
- **Implementering:** En 1-faset ansøgningsproces med åben konkurrence.
 - Max. 10-siders ansøgning, som evalueres af internationalt fagfælle ekspertpanel.
 - Bedste ansøgere inviteres til et interview.
 - Ekspertpanelet udvælger projekter.
- **Støtte:** Budgetramme er DKK 30 mio., som uddeles i 2016
 - Hvert projekt kan ansøge om op til DKK 10 millioner over en 4-årig projektperiode.
 - Hovedansøger skal have hjemsted på offentlig forskningsinstitution i Danmark.