NWO & the Biobased Economy

8 March 2017

Nederlandse Organisatie voor Wetenschappelijk Onderzoek

New NWO organisation

Su ard

stakeholders

Ex d

Chair + PBF + 4 Domain Chairs

National Research Institutes
NIOZ
CWI
AMOLF
DIFFER
Nikhef
ASTRON
SRON
NSCR

Domain Board **Physical and Natural Sciences** (former N/FOM, CW, EW, ALW)

Domain Board **Technical and Applied Sciences** (former STW)

Domain Board **Social Sciences and Humanities** (former GW, MaGW)

Domain Board **Health Research and Development** (former ZonMW)

Advisory Board

Cross-domain programming, strategic challenges, Top Sectors/NWA

BBE at NWO IC 2016-2017

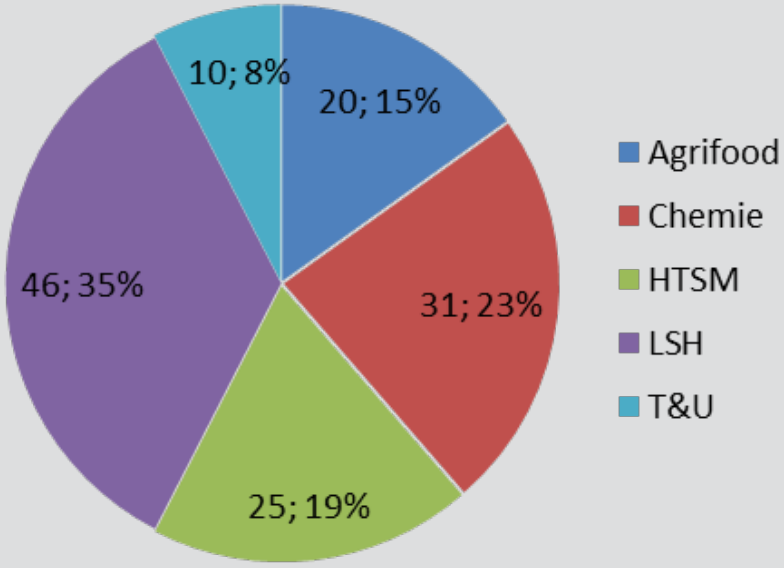
Program	Top sectors	Budget
Building blocks of Life	A&F, Chemie, LSH, HTSM, T&U	M€ 10,75
Closed cycles	A&F, Logistiek, T&U, Water, Creatieve Industrie	M€ 5
Green II	A&F, T&U	M€ 4
Responsible Innovation (MVI)	All	M€ 6
Materials for Sustainability	Chemie, Energie	M€ 9
Solar to Products	Chemie, Energie	M€ 5
Innovation Fund for Chemistry	Energie, LSH, HTSM, ICT, CI, AgriFood, T&U, Water	M€ 11
Partnership NWO-Carbohydrate Competence Center	AgriFood	M€ 2,25
Era-Net Surplus2	AgriFood	k€ 250
ERACoBioTech (Building Blocks of Life)	Chemie, Energie, LSH	(>) M€ 1
NWO Vrije Competities and Open Technologie Programma		

More BBE (IC 16-17)

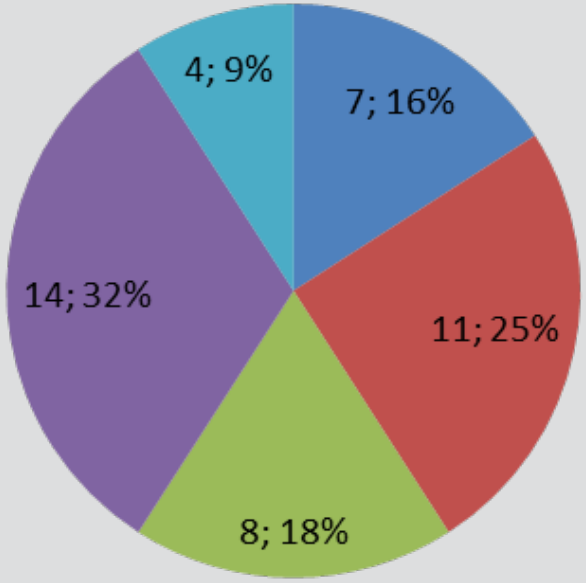
Program	Top sectors	Budget	Who
Biobased Performance Materials	Chemie	M€ 3	WUR/FBR
Green Chemistry Campus	Chemie	M€ 1,6	TNO
Brightlands Materials Center	Chemie	M€ 1,6	TNO
Biorizon	Chemie Energie	M€ 0,7	TNO
Towards Biosolar Cells			
Energy tenders BBE	Energie		
BE-BASIC			
ISPT			
BPF			
.....			ECN
.....	A&F		

Building Blocks of Life (Bouwstenen van Leven)

- Large number of applications #48 (3 x available budget M€ 10)
- 76 private partners involved: 60% SME
- Crossover collaboration between disciplines and between top sectors (boundary condition of call)
- Private partners: both large companies and SMEs
- Good representation of collaborating top sectors



submitted projects



granted projects (#16)

Results 2016-2017

Building Blocks of Life (Bouwstenen van Leven), BBE related

Nieuwe gereedschappen voor het bestuderen en optimaliseren van gistcelfabrieken
Dr. P.A.S. Daran-Lapujade, Technische Universiteit Delft – DSM Food Specialties

Microalgen op maat voor duurzame olieproductie
Dr. Ir. P.P. Lamers, Wageningen Universiteit & Research – Biostream

Licht in de duisternis: de invloed van lichtkwaliteit op de ontwikkeling van planten wortels.
Prof. dr. R. Pierik, Universiteit Utrecht - Limagrain Nederland B.V. and Rijk Zwaan Breeding B.V.

Grip op de stofwisseling van gist onder grillige condities
Prof. dr. B. Teusink, Vrije Universiteit Amsterdam - DSM Food Specialities B.V.

Results 2016-2017

Solar to Products

Dr. F. Branco dos Santos (UvA)- Photanol - ***Darwin's path towards sustainability: Exploring evolutionarily stable strategies in engineered biosolar cell factories***

Dr. F. Buda (UL)- SCM - ***Design and optimization of a photoanode for solar fuel production***

Prof. dr. G. Mul (UT)- Syngaschem- ***Photo Thermocatalytic conversion of CO2 and H2O to methanol***

Prof. dr. G. Mul (UT)- TNO and Shell - ***Electrochemical reduction of CO2 to ethylene***

Prof. dr. J.N.H. Reek (UvA)- Merck - ***Redox Mediators in Dye-sensitized Photoelectrochemical Cells for CO2-reduction***

Prof. dr. ir. G. van Rooij (DIFFER)- Shell - ***CO2 valorisation in biogas by Solar driven Plasma Reforming***

Prof. dr. ir. M.C.M. van de Sanden (DIFFER)- Shell - ***Vibrationally stimulated electro-fuel production in a proton conducting solid oxide electrolysis cell***

Dr. W.A. Smith (TUD)- Shell - ***An integrated device to directly convert sunlight, water, and CO2 to syngas***

Results 2016-2017

Closed cycles – transition to a circular economy

28 applications submitted; decision making October 2017.

Scope: Closing cycles in urban areas, circular maintenance of fresh water, soil and eco systems (in rural areas), closing cycles at European and/or global level, logistics related to products and resources, transition to circular models.

Innovation Fund for Chemistry

Bio-p-terephthalic acid from glycerol (Bio-PTA)
Prof. dr. Erik Heeres (RUG) and BioBTX/Syncom/KNN Advies

Carbon dioxide, water and green electricity as building blocks for sustainable chemistry
Prof. dr. Richard van de Sanden (DIFFER) and Syngaschem

DYNAM - 3D printing materials
Prof. dr. Rint Sijbesma, Prof. dr. Albert Schenning (TU/e), Prof. dr. Clemens van Blitterswijk, Prof. dr. Lorenzo Moroni (UM), and DSM, TNO, Xilloc Medical and Brightlands Materials Center.

MVI

Boeren zijn nodig voor een Biobased Economy
Dr. Lotte Asveld, Technische Universiteit Delft, projectduur 3 jaar
Consortiumpartners: DSM, BioRefineryDevelopment, GoodFuels Marine, SkyNRG, CarbonAgro, Havenbedrijf Rotterdam, Rodenburg Biopolymers, Sunchem South-Africa

Afvalwater zuiveren met algen
Prof. dr. Annemarie Mol, Universiteit van Amsterdam, projectduur 3 jaar
Consortiumpartners: Waterschap Aa en Maas, Waterschap De Dommel, Brabant Water, Ecovillage Boekel

Possibilities in 2017

- Innovation Fund for Chemistry
- Call Biobased Economy 2017 – joint call with Brazil
- ERACoBioTech
- Materials for Sustainability
- Green II
- Era-Net Surplus2
- NWO-CCC - Carbobiotics

Innovation Fund for Chemistry

- NWO's contribution to stimulate public-private partnerships in chemistry

- Is an open program -> topics of projects should comply with the ambitions of the Top Sector Chemistry -> 5 roadmaps

  Chemistry of Advanced Materials

  Chemistry of Life

  Chemical Conversion, Process Techn & Synthesis

  Chemical Nanotechnology & Devices

  Onderzoeksagenda Biobased Economy 2015 – 2027

- Budget 2016-2017: M€ 11

Innovation Fund for Chemistry

Project type	Contribution industry (%)	Contribution NWO (%)	Project budget (k€)	Participants
KIEM	20	80	18.75	1 SME/startup + 1 university
LIFT	25	75	150-300	≥ 1 company + ≥ 1 university
TA	33	67	750-1500	≥ 2 companies + ≥ 2 universities
CHIPP	50	50	1500-2000	≥ 1 company + ≥ 2 universities

- **KIEM, LIFT, CHIPP**: private contribution = **cash** (no *in kind*)
- **TA**: private contribution = **cash + *in kind***
- **CHIPP**: open ***Call on specific topic*** possible
- **LIFT:** regular (2 phases) or complete project

LIFT-regular

Contributions	Cash phase 1 (k€)	Cash phase 2 (k€)	Total phase 1 + 2 (k€)
Company	5.5 – 11	32 - 64	37.5 – 75
NWO	29.5 - 59	83 - 166	112.5 - 225
Total cash budget	**35 - 70**	**115 - 230**	**150 - 300**

- LIFT-regular = project in **2 phases**
  -> applied for and assessed at the same time
- 1st phase: 16% private cash (commitment)
- 2nd phase: 28% private cash (intention) -> overall 25% private cash
- After granting: budget phase 1 available + reservation phase 2
- Budget phase 2 available after **GO-decision** of company + commitment

LIFT-complete

Contributions	Cash (k€) + firm private commitment
Company/companies	37.5 – 75
NWO	112.5 - 225
Total cash budget	**150 - 300**

- LIFT-complete = whole project all-in-one (no phases)
- Private contribution: 25% cash (+ firm commitment)
- -> PhD-project possible

Innovation Fund for Chemistry - procedure

Science
researchers, infrastructure

Industry
companies, innovation-driven

Idea for PPP-Research Proposal

Full Proposal + declaration of suitability + letter(s) of commitment

Top Sector Chemistry

Assessment by TKI Chemistry
- Fit in Roadmap(s)?

- Chem. Advanced Materials
- Chemistry of Life
- Chem. Conversion, Process Technology and Synthesis
- Chemical Nanotechnology and Devices
- Research agenda BBE

Process: 2 weeks

Declaration of suitability

NWO Innovation Fund for Chemistry

LIFT, TA, CHIPP **KIEM**

Assessment procedure

Peer review + rebuttal /interview ‘PPS-Raad’

Criteria: LIFT / TA / CHIPP
- Scientific Quality
- Quality of consortium
- Innovation potential
- Programme management

KIEM
- Innovation potential
- Composition and complementarity team
- Project management

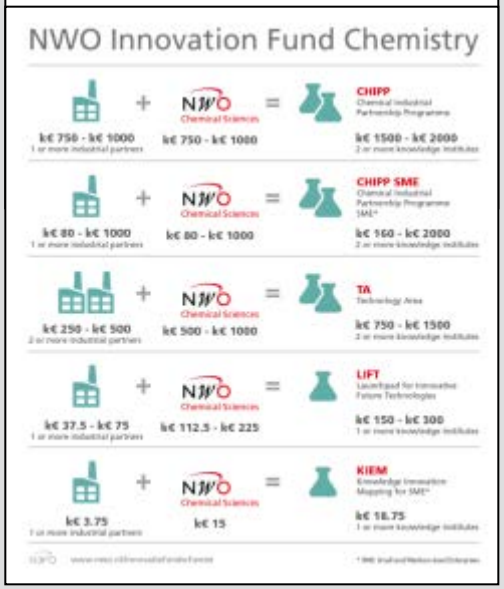
Process: ~ 4-5 months ~ 6 weeks

Innovation Fund for Chemistry

Characteristics / assets:

- Good funding chances for applications rated as excellent or very good (compared to other competitions)
- Foreign companies can take part too
- Adequate for small, medium and large companies due to various project types
- Suitable for one company (KIEM, LIFT, CHIPP) and for consortia (TA)
- Private platforms/consortia can have an NWO-call on specific topics
- Customized agreements regarding IP rights

Innovation Fund for Chemistry



Innovation Fund for Chemistry 2016-2017

Deadlines CHIPP, TA, LIFT:

- ~~7 February 2017~~
- 27 June 2017

KIEM: no deadlines

Budget still available: ~M€ 5

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Maarten de Zwart, **m.dezwart@nwo.nl**
T 070 3440 697 / M 06 300 29 741

www.nwo.nl/innovatiefondschemie

Call Biobased Economy 2017

- Call for joint proposals from researchers in the Netherlands and the State of São Paulo in Brazil

Call Biobased Economy 2017

Preliminary themes

(Fundamental) research in the field of the **Biobased Economy**

- Biotechnology / bioprocess technology
- Systems and synthetic biology
- Sustainable agriculture
- Biobased materials and energy
- Catalytic conversion of biomass

Budget

- NWO total budget: ca. 1.8 M€
- Comparable investment from FAPESP
- Projectbudget in NL: max 300 k€
- ca. 5-6 projects can be funded

Call Biobased Economy 2017

Preliminary timeline

March 2017:	Preparing the call (NWO-FAPESP)
5-6 April 2017:	Workshop/**matchmaking** in São Paulo
April 2017:	Launch of the call
5 June 2017:	Call deadline
October 2017:	Evaluation committee meeting
November 2017:	Decision

Contact Tim Vos for more info and to register for the workshop!
t.vos@nwo.nl
T 070 344 09 84

ERA CoBiotech 2017

- Call for joint proposals from European consortia

ERA CoBiotech 2017

Themes

Approaches (at least one):

- Synthetic biology
- Systems biology
- Use of bioinformatics tools
- Biotechnological approaches

Topics (at least one):

- Sustainable production/conversion feedstocks
- New products / supply services
- Sustainable indsutrial process

Scope

- At least 3 EU partners
- TRL level range: 3 - 6
- Industry engagement is encouraged

Budget

- NWO total budget: ca. 1.0 M€
- EU top-up ca. 8.0 M€
- Max subsidy for NL partners: 250 k€
- Ca. 4-6 NL projects expected

ERA CoBiotech 2017

Timeline

2 March 2017:	Deadline pre proposals
May 2017:	Start full proposal phase
20 July 2017:	Deadline full proposals
October 2017:	Announcement of evaluation results

Statistics

Applications received: 119

Requested budget: M€ 166, M€ 36,3 available

projects NL coordinator: 10

projects NL partner: 47

Contact Tim Vos

t.vos@nwo.nl

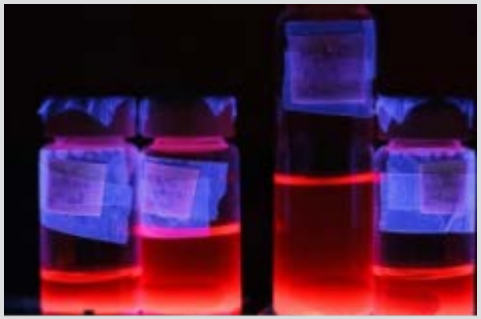
T 070 344 09 84

http://www.nwo.nl/en/news-and-events/news/2016/cw/era-net-cofund-biotechnology-cobiotech.html

Materials for Sustainability (M4S)

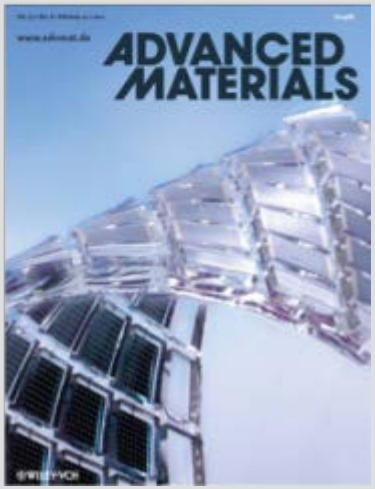
Scope, timeline, budget

- Cross-over Top sectors Energy and Chemistry
- NWO: M€ 9. Expected cofinancing 25% → ca. 12 M€
- Call outline ready by end of March 2017
- **Matchmaking** May 2017
- Call open Q2 2017
- Decision making Q4 2017



Program committee

Prof. Wim Sinke (ECN)
Prof. Joost Reek (UvA)
Dr. Erik Garnett (AMOLF)
Dr. Peter Berben (BASF)
Prof. Bernard Dam (TUD)
Prof. Kitty Nijmeijer (TU/e)
Prof. Petra de Jongh (UU)
Prof. Jaime Gomez Rivas (DIFFER)



Materials for Sustainability (M4S)

Themes

Research into materials that enable:

- Light to electricity and fuels
- Electricity to fuels
- Compact storage of electricity and heat
- Direct air capture, conversion and storage of CO2

Sustainability of materials and design for sustainability, including CO2 footprint, resource availability and resource efficiency, recyclability, etc., are imperative aspects to be taken into account in research and development rather than topics in itself.

Contact Peter Spijker, Marijn Goes
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T 030 600 12 17/ 070 344 09 82

Green II

Timeline, budget

Call open; deadline 4 april
Budget max. 4 M€

Themes

- Future-oriented system change in agriculture and horticulture
- A consortium of researchers and private partners may apply for funding for research that provides the basis for a ground-breaking system change aimed at realising resilient and integrally **sustainable plant and animal production systems**, higher food security, and the conservation of nature and ecosystem services in the Netherlands

Contact Jelte Wouda
j.wouda@nwo.nl
T 070 344 06 87

www.nwo.nl/en/funding/our-funding-instruments/alw/green/green.html

Era-Net Surplus2

Timeline, budget

Call open; deadline March 30
Budget: k€ 250

Theme & Scope

- Sustainable and resilient agriculture for food and non-food systems
- European joint call for research proposals on small-scale biorefineries.
- Dutch scientists can participate as part of international consortia. Applications are handled by the joint call secretariat of SURPLUS

Contact Martijn Los
m.los@nwo.nl
T 070 344 05 08

www.nwo.nl/en/funding/our-funding-instruments/alw/era-net-surplus/era-net-surplus.html

http://faccesurplus.org/

NWO-CCC - Carbobiotics: Pre/Probiotics Mitigating the Antibiotics Burden

Timeline, budget

Call open; deadline April 6
Budget: M€ 2,25

Theme

- Antibiotics/prebiotics/probiotics on (in)stability and recovery of gastrointestinal tract microbiota at the strain and population levels, in both humans (specifically infants and elderly) and production animals (poultry, pigs, cows).

Contact Martijn Los
m.los@nwo.nl
T 070 344 05 08

www.nwo.nl/financiering/onze-financieringsinstrumenten/enw/partnership-nwo-ccc---carbobiotics-pre-probiotics-mitigating-the-antibiotics-burden/partnership-nwo-ccc---carbobiotics-pre-probiotics-mitigating-the-antibiotics-burden.html

2018 and beyond

Under discussion

- Value from biomass (C3+, alternatives for ethanol)
- SME program Biobased Economy and materials (HBO/WO/TO2)
- Electrochemical conversion and materials
- Circular Economy
- Building blocks of life
- ….

International

- Brazil: Biobased Economy
- Germany: electrification, BBE?
- ….