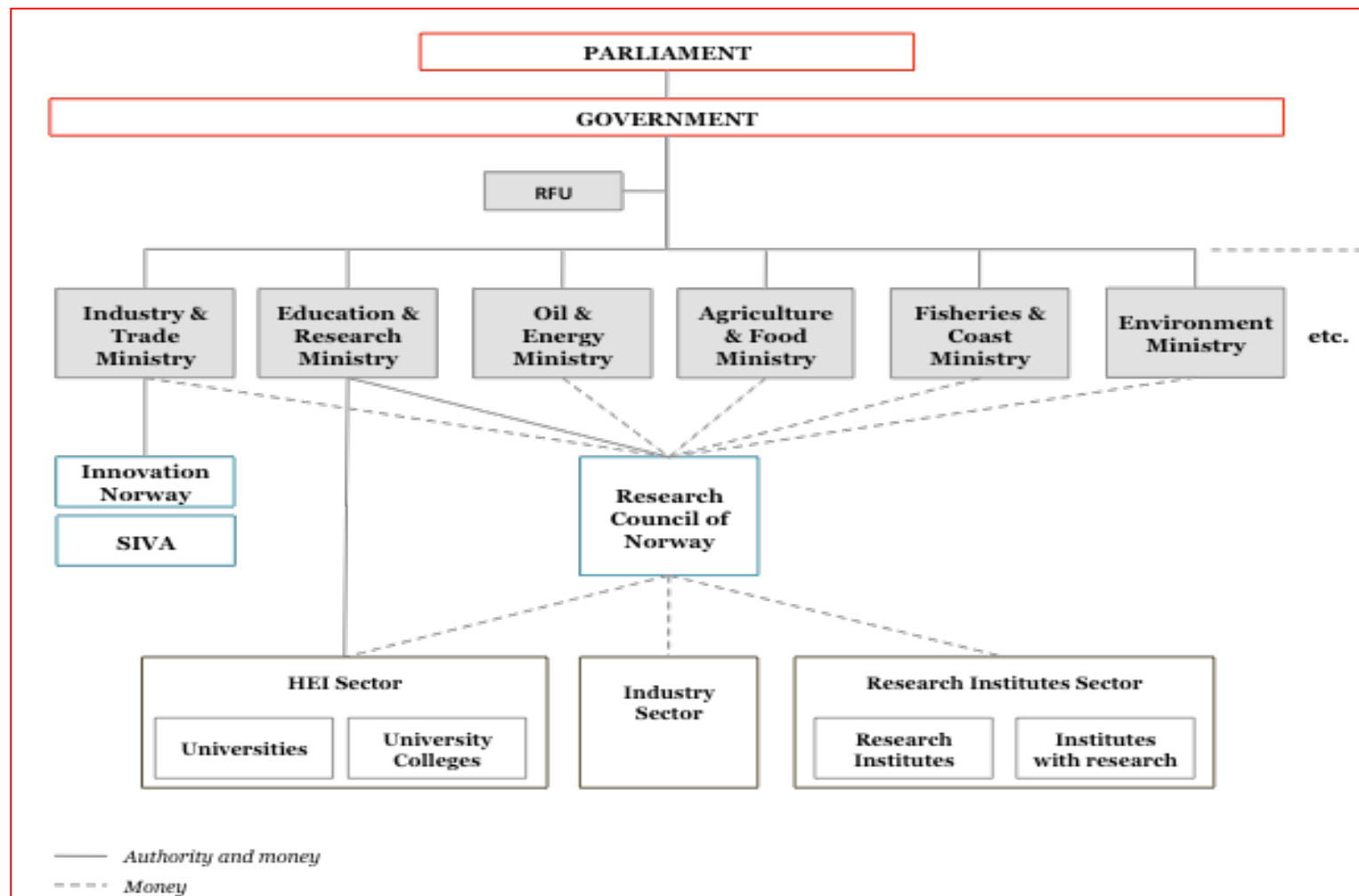


The Circular Economy

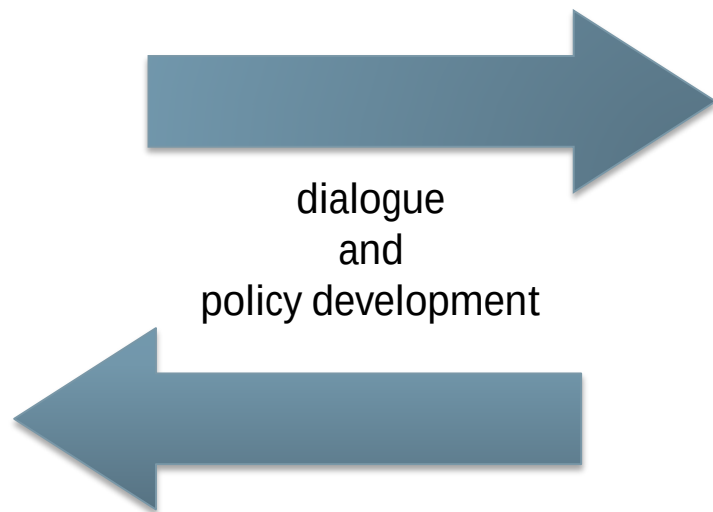
– national and international funding opportunities

SINTEF Conference Mo i Rana, May 10-11 2017
Gro Marthinsen, Senior Adviser

Research and innovation governance in Norway (illustration)



RESEARCH COUNCIL STRATEGY 2015-2020



GOVERNMENT WHITE PAPER



Long-term plan for research and higher education (2015-2024)

Oceans	Environment and energy	Public services	Enabling technologies	A competitive industry	Excellence in research
Marint	Miljøvennlig energi	Fornyelse i offentlig sektor	IKT	Næringsliv i bredden	Fagmiljøer og talenter
Maritimt	Klimasystem og tilpasning	Velferd-, helse- og omsorgstjenester	Bio- og Nanoteknologi	Kommersialisering	Forskningsinfrastruktur
Petroleum	Miljø og samfunn	Utdanning og læring	Avanserte prod. prosesser	Nærings- og samfunnsutfordringer	Internasjonalisering

Funding opportunities can be found in existing programmes

- § **BIA**
Brukerstyrt innovasjonsarena / User-driven research
- § **ENERGIX**
Energy research
- § **BIONÆR**
Sustainable Innovation in Food and Bio-based Industries
- § **HAVBRUK 2**
Aquaculture Research
- § **KLIMAFORSK**
Climate Research
- § **MILJØFORSK**
Environmental Research for a Green Transition
- § **Horizon 2020 and Eurostars**
EU programmes

BIA - research based innovation

- § Open scope and open competition
 - § No thematic priorities with pre-allocated budgets, but thematic complementary towards other programmes
- § Emphasis on value creation and cooperation
 - § Based on the companies business strategies (bottom up)
- § Companies and research institutions cooperate
- § International cooperation
 - § 80 % of projects
- § Triggers R&D investments in industry
 - § own funding and investors
- § Strong SME involvement
 - § 60% of participating companies are SMEs

BIA - R&D and business opportunities in circular economy

§ Waste to value, *Glencore Nikkelverk AS*

- § The objective of the project is to process the waste into different products, or to upgrade the waste flow into raw materials within the company's own processes.

§ Investigating Wool Keratin Chemical Recycling as a Part of Applying a Circular Business Approach, *Helly Hansen AS*

- § Develop a new innovative process and business model for the regeneration of low grade keratin products to higher added value products for the textile and other industries.

§ Network for green growth, (2016-2019), *NTNU*

§ Network for circular economy and business models, (2017-2019), *Polyteknisk forening*

ENERGIX - Energy Research

Designed to generate new knowledge to support the long-term, sustainable restructuring of the **energy system**, which will require

- § more renewable energy
- § more energy-efficient solutions
- § closer energy integration with Europe
- § improved flexibility
- § Targeted towards Norwegian companies and research and educational institutions
- § Important secondary objectives:
 - To achieve sustainable utilisation and consumption of renewable energy resources
 - To reduce Norwegian and global emissions of climate gases
 - To ensure Norway's security of supply
 - To strengthen innovation in Norwegian trade and industry
 - To further develop Norwegian research communities

ENERGIX - R&D and business opportunities in circular economy

§ Hypertermics Energi

- § More efficient fermentation as pre-treatment step in Biogas plants

§ Biokraft

- § Energy efficient biogas production by recirculation of nutrients and complete utilisation of resources

§ Norske Skog Saugbrugs

- § Developing new technology for producing biogas transportation fuel and biocarbon

§ GREVE Biogass

- § Increase production and use of biogas from waste and manure in Norway

BIONAER

- Sustainable Innovation in Food and Bio-based Industries

- § 225 mill. NOK per year from the Ministry of Agriculture and food
- § Research (projects) and innovation (projects) in and management of the value chains for agriculture, forestry and nature-based industries:
 - § Food and feed production system, wood use, tourism, innovative products and services
- § Key areas of focus:
 - § the concept of the bioeconomy and achieving **closed-loop** systems,
 - § sustainability, value creation
 - § The bioeconomy – the biomass based **circular economy**

BIONAER

- R&D and business opportunities in circular economy

§ CYCLE:

Improved resource utilization, food chains, sustainable bio processes/ technology:
The project aims to achieve total utilization of raw material from fish, chicken and vegetables by developing new bioprocesses, technological solutions and assess the socio-economic challenges with a focus on sustainability (environment, economy and society).

§ PROMAC:

Energy efficient PROcessing of MACroalgae in blue-green value chains

§ iProcess:

More value, less wastage/waste: the project has an ambition to develop new flexible processing concepts, methods and business models for a sustainable value generation in Norwegian food production industry.

§ Nutrients in a Circular Economy:

Barriers and Opportunities for Mineral Phosphorus Independence in Norway

§ ENTOFÔR:

Insect production, from waste to resource

HAVBRUK2 - Aquaculture Research

- § The programme will generate knowledge and solutions for socially, economically and environmentally sustainable growth
 - § Fish welfare and ethical production
 - § Safe and healthy seafood
- § Fundamental research (**Researcher projects**)
 - § Scientists, authorities and industry need and want fundamental research
 - § Fund long-term research to build competence and to ensure recruitment
- § Innovation in the industry (**Innovation projects**)
 - § Promote and fund active industrial participation – both in innovation and researcher projects
 - § Relieve risk for piloting and demonstration for the supplier industry
- § The whole aquaculture value chain (incl. R&I on processing and market)
- § The programme is a key instrument in targeting the **blue bioeconomy**

HAVBRUK2 - R&D and business opportunities in circular economy

Feed resources:

§ Heterotrophic microalgae for future marine omega-3 rich salmon feeds

Main goal: to safely include high long chain omega-3 polyunsaturated fatty acids (LCn-3PUFA) from heterotrophic microalgae (HM) (Schizochytrium sp., Alltech Ltd) in salmon feeds.

§ Insects as natural feed ingredients for sustainable salmon farming

Main goal: to study the possibility to tailor insect meal as an ingredient in a sustainable feed, covering the nutrient requirements and secure production of robust fish.

Waste:

§ Exploitation of nutrients from Salmon aquaculture, EXPLOIT

Main goal: to make a broad approach to investigate the potential for IMTA (Integrated Multi-Trophic Aquaculture) in Norway. In the project, critical hydrodynamic, chemical and biological variables is monitored.

§ MACROSEA - A knowledge platform for industrial macroalgae cultivation

Main goal: to establish an interdisciplinary knowledge platform on fundamental production biology and technology for macroalgae cultivation over a wide range of climatic, ecological and physical conditions.

KLIMAFORSK - Climate Research

§ Primary objective:

- § Promote outstanding climate research to the benefit of society.

§ Secondary objectives:

- § Increase knowledge about natural and anthropogenic climate change;
- § Improve knowledge about the impacts of climate change on nature and society;
- § Enhance knowledge about the transition to a low-emission society and adaptation to climate change.

KLIMAFORSK - R&D and business opportunities in circular economy

§ Research on the effects of climate change and their impact on business, for example within:



Food production



Water



Infrastructure



Health



Tourism

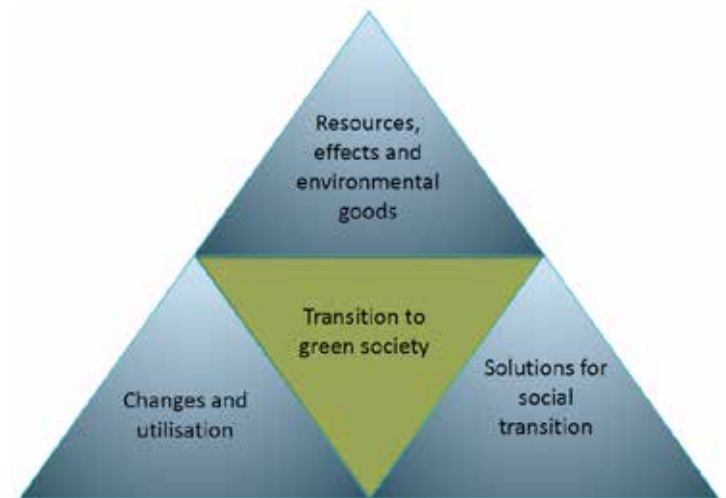
MILJØFORSK

- Environmental Research for a Green Transition

§ The Research Council's primary initiative for land-based environmental research

§ Topics:

- § biodiversity and ecosystem services
- § pollution and hazardous substances
- § societal drivers and measures
- § cultural environments
- § pressures on the environment



§ Annual calls (call budget: ~ 80 MNOK)

§ Promoting more interaction with industry and trade is a strategic priority

MILJØFORSK - R&D and business opportunities in circular economy

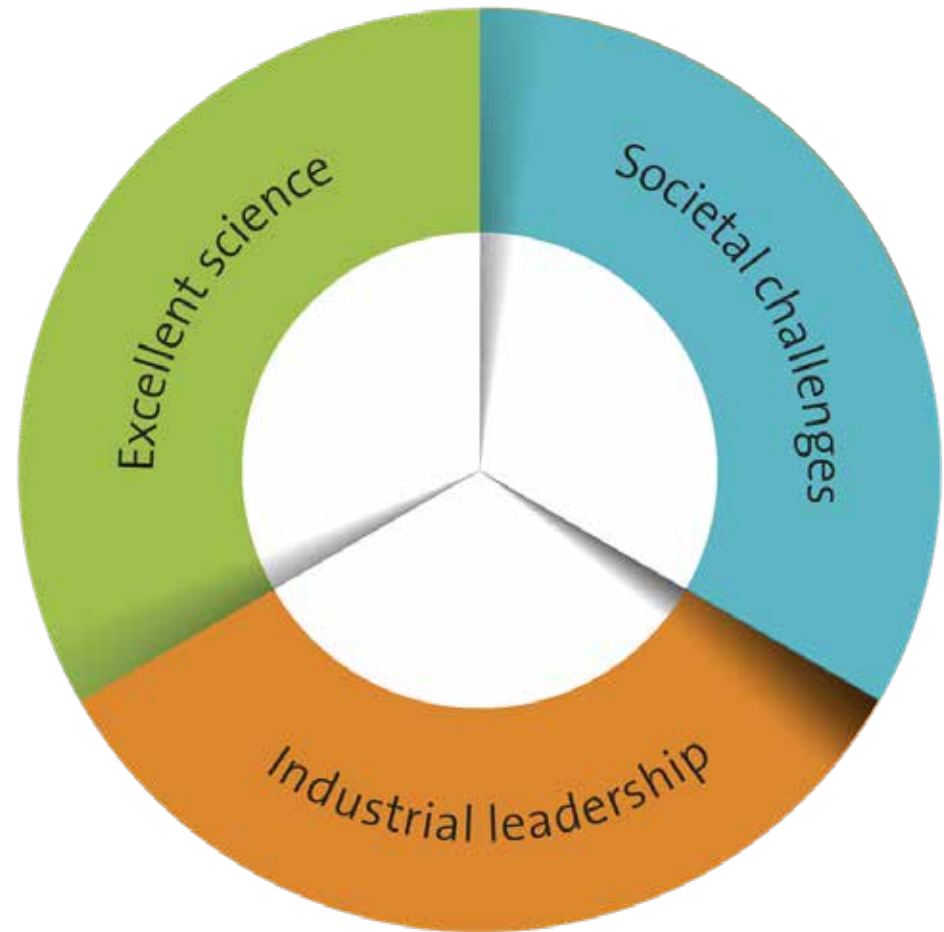
- § Ecosystem footprints: Land Use Impacts and their Socioeconomic Determinants, *NTNU*
- § Novel organic pollutants from recycling of organic waste as risk factors for human exposure, *NMBU*

A history of circular economy relevant projects in:

- § **Waste** – use, risks and treatment
 - § Life cycle effects of emerging contaminants in waste, *NGI*
- § **Global trade chains**
 - § Regulations, markets and consumer self-regulation in global sustainable development. A comparison of three European countries, *SIFO*
- § **Consumer related topics**, textiles and food
 - § From waste to material resources in a cradle to cradle perspective: A stakeholder approach within the textile value chain, *SIFO*

Circular Economy in Horizon 2020 (EU)

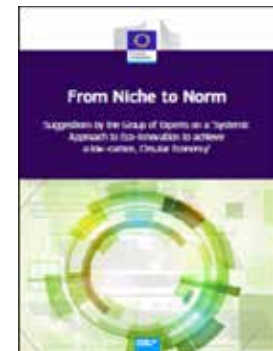
- § Horizon 2020 is the world's largest research and innovation programme
- § Circular economy is prioritized and cross-cutting
- § Calls for 2018-2020 to be launched approx. October 2017



The three pillars of Horizon 2020

Horizon 2020: Circular economy and the Industry

- § Involvement from industry sector highly relevant and requested in calls
- § Systemic innovation is an essential concept
 - § Report “From Niche to Norm” from expert group recommended reading
- § A couple of Norwegian success stories:
 - § SINTEF and industry-partner Resitec: old solar panels
 - § Bergen municipality and NTNU: water and wastewater



EUROSTARS

- § Joint programme between EUREKA and EU
- § Dedicated to R&D-performing SMEs:
 - § SME is always the project leader
 - § Min. 50% of R&D in-house
- § Market-oriented
 - § Product, process, service
 - § Market introduction is foreseen within 2 years after project completion
- § Bottom-up (SME decides)
- § International cooperation
 - § At least two participants from at least 2 Eurostars countries
 - § Access to new markets, new competences, new contacts

Funding opportunities - practicalities

<u>Programme</u>	Deadlines	Applications types	Who can apply?	Support	Contact Persons
BIA	October 11, 2017	Innovation Project for the Industry Sector Deadline for submitting voluntary project outlines for feedback August 2017.	Companies. Must cooperate with R&D.	Normally about 35-40%	Verena Hachmann: vha@rcn.no
	September 2018 (Biannual)	Knowledge building projects for industry. Mandatory outline planned spring 2018.	Research institute or a university. Must cooperate with industry.	Cash contribution from <u>companies</u> min 20%. 70-80% support from RCN	Jan Rasmus Sulebak: jrs@rcn.no
ENERGIX	October 11, 2017	Innovation projects	Companies. Must cooperate with R&D.	Normally 50% support based on eligible costs	Trond Værnes: trv@rcn.no
BIONÆR	October 11, 2017	Innovation projects Deadline for submitting voluntary project outlines for feedback August 31, 2017.	Companies. Must cooperate with R&D.	Normal public support 50% of costs.	Trond Einar Pedersen: tep@rcn.no 916 42 920



HAVBRUK 2	September 6, 2017	<u>Researcher projects</u>	<u>Research institutions</u>		Kjell Emil Naas ken@rcn.no 22037415
	<u>October 11, 2017</u>	<u>Innovation projects</u>	Companies. Must cooperate with R&D.		Inger Oline Røsvik ior@rcn.no 22037532 Kjersti Fjalestad ktf@rcn.no 22037097
KLIMAFORSK	September 6, 2017	<u>Knowledge-building projects</u>	A research institution in binding cooperation with relevant users from the private, public and/or third sectors.	Up to 90%	Brita Slettemark: bsl@rcn.no 97981428 Malin Lemberget Lund: mlu@rcn.no 41684765
	September 6, 2017	<u>Researcher projects</u>	Research institutions	Up to 100%	Tore Søliland tso@rcn.no 98421374

MILJØFORSK	September 6, 2017	<u>Researcher projects</u>	Research institutions The call is directed towards pressure areas Topics: biodiversity, cultural heritage, <u>sust.</u> urbanization		Jonas Enge: jen@rcn.no <u>tel:</u> 40203416
	2018	More interaction with industry and trade is highly encouraged. Future cooperation with related <u>programmes</u> in order to <u>strengthen</u> the contact and involvement with industry and trade in our calls and projects are being discussed. In this regard also other project types than researcher projects will be considered.	2018 call will be more rural Topics: ecosystem-based management, sustainable land use, nature and culture-based solutions		



HORIZON 2020	Calls for 2018- 2020 to be launched approx. October 2017	H2020 is the world's largest research and innovation <u>programme</u>	Involvement from industry sector highly relevant and requested in calls Circular economy is prioritized and cross- cutting. Systemic innovation is an essential concept.	Assistance from the Research Council: Courses, <u>mentoring</u> , <u>assistance</u> , review of proposals. Project Establishment Support (PES2020): 50% of - costs related to the preparation of H2020-project proposals - costs related to travel and positioning activities	Ingunn Borlaug Lid: il@rcn.no Janicke Giæver: jag@rcn.no Tor Einar Johnsen (raw materials): tej@rcn.no
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EUROSTARS	September 14, 2017	Funding and support <u>programme</u> specifically dedicated to SMEs.	The project leader must be an R&D- performing SME The project must involve collaboration with a least one partner from another <u>Eurostars</u> country The project must develop a new product, process or service.	Assistance from the Research Council: Project Establishment Support (PES2020): 50% of - costs related to the preparation of <u>Eurostars</u>-project proposals - costs related to travel and positioning activities	Inga E. Bruskeland: ieb@rcn.no
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