

## Recruiting for 15 open PhD positions

in the first ever H2020 Marie Curie Innovative Training Network on  
**Circular Economy Research (Circ€uit)**



Universiteit Leiden



Deadline: 15th August 2016 via [sollicitaties@cml.leidenuniv.nl](mailto:sollicitaties@cml.leidenuniv.nl)

Applications are invited for 15 PhD positions (“Early Stage Researchers”) to be funded by the Marie-Sklodowska-Curie Innovative Training Network “Circ€uit” - Circular European Economy Innovative Training Network” within Horizon 2020 Programme of the European Commission. “Circ€uit “ is a consortium of high profile universities, research institutions and companies located in the Netherlands, France, UK, Sweden and Norway.

### **Number of positions available:**

15 PhD positions

### **Research Fields**

Business modelling, reverse logistics, consumer behaviour, sustainable design, environmental and economic assessments via input-output analysis and LCA, policy for sustainability

### **Career Stage**

Early Stage Researcher (ESR) or 0-4 years (Post Graduate)

### **Benefits and salary**

The successful candidates will receive an attractive salary in accordance with the MSCA regulations for early stage researchers. The exact salary will be confirmed upon appointment and is dependent on the country correction factor (to allow for the difference in cost of living in different EU Member States). The salary includes a living allowance, a mobility allowance and a family allowance (if married). The guaranteed PhD funding from the EU is for 36 months. In addition to their individual scientific projects, all fellows will benefit from further continuing education, which includes internships and secondments, a variety of training modules as well as transferable skills courses and active participation in workshops and conferences.

**Circ€uit** - H2020 Marie Curie Innovative Training Network on Circular Economy Research

**Applicants need to fully respect three eligibility criteria:**

**Early-stage researchers (ESR)** are those who are, at the time of recruitment by the host, in the first four years (full-time equivalent) of their research careers. This is measured from the date when they obtained the degree which formally entitles them to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the research training is provided, irrespective of whether or not a doctorate was envisaged.

**Conditions of international mobility of researchers:** Marie Curie Innovative Training Networks are a mobility scheme. Researchers are required to undertake trans-national mobility (i.e. move from one country to another) when taking up the appointment. At the time of selection by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to their recruitment. Short stays, such as holidays, are not taken into account.

**English language:** Network fellows (ESRs) must demonstrate that their ability to understand and express themselves in both written and spoken English is sufficiently high for them to derive the full benefit from the network training.

**Recruitment Procedure (see Appendix 1 (last page) for full description)**

All applications must be addressed to “Circ€uit PhD recruitment , p/a [sollicitaties@cml.leidenuniv.nl](mailto:sollicitaties@cml.leidenuniv.nl) “. The deadline for submitting a cover letter and adequate CV is 15 August 2016. Candidates may apply for one to maximum three positions, using the same cover letter and CV. The Circ€uit Recruitment Committee selects between 20 and maximum 30 candidates for the Recruitment Event which will take place in Leiden on 12 September 2016. The selected candidates provide a 15-minute presentation and are examined by the Recruitment Committee. In order to facilitate their travel, selected candidates (from outside the Netherlands) receive a fixed, lump sum of 250 euro (paid by the prioritised Supervisor). The final decision on who to recruit is made the day after the Recruitment Event. The selected ESRs are to start their research as quickly as possible (**target: 1 November 2016; Cranfield University and Aston Business school: ideally 1 October 2016 since they only have one or two intake moments for PhDs per year**).

**Format requirements for the motivation/cover letter**

- Reference line: refer to ‘Circ€uit PhD recruitment – ‘ followed by the ESR positions in the sequence of preference, with a maximum of three (e.g. ‘Circ€uit PhD recruitment – ESR2>ESR7>ESR1)
- Discuss in 3 bullets your eligibility, and provide proofs of eligibility as an annex where relevant
  - ESR: you have no more experience as 4 years after your MSc graduation at the intended moment of recruitment. Sent a copy of your MSc thesis that shows the graduation date in English.
  - Mobility: give proof that you did not spent more than 12 months in the last 3 years in the country where the ESR position will be hosted.
  - English language: sent results of a language test, or make otherwise plausible your English is adequate (e.g. MSc Thesis written in English, etc.).
- Give a motivation why you chose to apply for the specific ESR position(s)
- There are no further format requirements for the motivation/cover letter, nor the CV.

## **The 15 available positions**

Lead supervisors as indicated in the short descriptions may be contacted with specific questions related to the individual projects, or related to the universities where these will be located.

### ***Circular Economy/product service business models: how to create business value by circular provisioning***

#### ESR1: Circular business model design (TU Delft)

Objectives: Exploring how companies can create new forms of value and achieve scale while transitioning to a circular, PSS based business model - the linkages between product and business model design

- Planned secondment(s): Aston, NTNU, Toyota, EMF CE100 and EIT KIC RM companies
- Lead supervisors: Dr Nancy Bocken and Prof. Erik-Jan, Hultink, TU Delft ([N.M.P.Bocken@tudelft.nl](mailto:N.M.P.Bocken@tudelft.nl))
- Duration: 36 months

#### ESR2: Development of product-service roadmaps (Aston University)

Objectives: The project will analyse the organisational development from a product focused to a service focused business model. The transition involves substantial cultural, structural and strategic changes across the organisation. The task is focused on identifying the organisational pathways and evaluating the experiences of product-service transitions to develop a guiding framework for organisational product-service transformation.

- Planned secondment(s): TU Delft, Linköping University, EMF CE100 and EIT KIC RM companies
- Lead supervisors: Prof Tim Baines and Dr Andreas Schroeder, Aston University ([a.schroeder@aston.ac.uk](mailto:a.schroeder@aston.ac.uk))
- Duration: 36 months

#### ESR3: Digital strategies for product-service business models (Aston University)

Objectives: The project will analyse the role of digital resources as enablers of product-service business models. Technology developments related to the Internet of Things and Big Data analysis create substantial opportunities to advance product-service business models and provide organisations with additional business value. The task is focused on developing a model that captures the digital strategies employed by organisations in a product service context and explains the contributions these strategies create

- Planned secondment(s): TUD, Linköping University, EMF CE100 and EIT KIC RM companies
- Lead supervisor Prof Tim Baines and Dr Andreas Schroeder, Aston University ([a.schroeder@aston.ac.uk](mailto:a.schroeder@aston.ac.uk))
- Duration: 36 months

### ***Circular economy/product service supply chains: How can we organize supply and delivery chains for circularity?***

#### ESR4: Reverse Logistics in Circular Economy (Cranfield university)

Objectives: This PhD project focuses on and analyse the roles of reverse logistics as a critical enabler of an effective and efficient PSS supply chain. It provides clear strategies for optimising the reverse logistics processes and functions, by embedding the principles of circular economy, thus allowing companies to grow the sustainable PSS businesses. Desk-based research will be carried out to identify from the body of literature crucial circular economy principles. System development and experimental design will be followed to formulate the design methodology and use cases

- Planned secondment(s): GRENoble INP, UL, Winnow Solutions, EMF CE100 and EIT KIC RM companies
- Lead supervisor: Benny Tjahjono ([B.Tjahjono@cranfield.ac.uk](mailto:B.Tjahjono@cranfield.ac.uk))
- Duration: 36 months

#### ESR5: Maximising the 'retained values' of servitised products (Cranfield University)

Provision of servitised products requires a well-managed logistics network to maximise the retained values of servitised products and to sustain its circulation. This PhD project will focus on collating best practices combined with the applications of modelling techniques, e.g. agent-based simulation, to come up with a set of operational strategies that companies can adopt to configure a circular economy supply chain that ultimately prolongs the life of the products in circulation, hence maximising its retained values. Methodologies include multiple exploratory case studies will be conducted to better understand the enablers and inhibitors of the circular economy supply chain and simulation and modelling of the actors within the supply chain will be conducted to come up with a set of operational strategies for the supply chain

- Planned secondments: Aston, Winnow Solutions, EMF CE100 and EIT KIC RM companies
- Lead supervisor: Benny Tjahjono ([B.Tjahjono@cranfield.ac.uk](mailto:B.Tjahjono@cranfield.ac.uk))
- Duration: 36 months

#### ESR6: Recovery strategies management (INP Grenoble)

Objectives: This PhD project focuses on defining the mechanisms of an efficient product recovery management system to collect recovered material and components from products taking into account product characteristics, end of life processes and business models, in order to optimise the end of use scenarios for products and to maximize the material/value recovered. In conjunction with ESR 5, ESR 6 will propose technical specifications and guidelines for recovery strategies management to be used by companies to formulate end-of-life processes and circular business models. Methods include the creation and formalization of knowledge about potential recovery value chains. It will include technical knowledge (assembly/disassembly, upgrading, additive manufacturing, etc.), but also knowledge related to the value chain to be put in place (organization, legislation, etc.) and definition of the mechanisms to model and optimise the value related to recovery scenarios from an economic, technical and environmental point of view.

- Planned secondment(s): Cranfield, UL, Winnow Solutions, EMF CE100 and EIT KIC RM companies
- Lead supervisor: Prof. Daniel Brissaud ([Daniel.Brissaud@grenoble-inp.fr](mailto:Daniel.Brissaud@grenoble-inp.fr))
- Duration: 36 months

### ***Users - how to stimulate circular use/consumption?***

ESR7: User acceptance for circular resource efficiency (NTNU)

Objectives: The research will focus on how consumer requirements such as (perceived) convenience for the end user and fulfilling requirements for circularity can be balanced. The research builds on existing insights from fields like design for sustainable behaviour, environmental psychology and social practice theory. It will focus on creating understanding about consumption paradigms that exist on the micro level, and will address locked-in behaviour in terms of what users think is acceptable when acquiring 'functionality' from commercial offerings

- Planned secondment(s): TU Delft, Linköping University, EMF CE100 and EIT KIC RM companies
- Lead supervisor: Prof. Casper Boks ([casper.boks@ntnu.no](mailto:casper.boks@ntnu.no))
- Duration: 36 months

### **ESR8: How can companies influence consumer behaviour through circular business models? (TU Delft)**

Objectives: The research would focus on the priorities, considerations and requirements that would feed into product portfolio and business model development, based on circular rather than linear value propositions. The research will create a decision making framework that facilitates the identification, justification and marketing of circular based PSSs to encourage sustainable consumption

- Planned secondment(s): NTNU, GRENOBLE INP, Toyota, EMF CE100 and EIT KIC RM companies
- Lead supervisors: Dr Nancy Bocken, Prof. Jan Schoormans, and Dr Ellis van Den Hende, TU Delft TU Delft ([N.M.P.Bocken@tudelft.nl](mailto:N.M.P.Bocken@tudelft.nl))
- Duration: 36 months

### **ESR9: Communication of CE based value propositions (NTNU)**

Objectives: This research will focus on stakeholders in the value chain (users, designers, management, retailers, suppliers and competitors). How are they likely to respond to building up business models and product portfolios based on CE based value propositions, how can this be anticipated, and how can insights be used for communication and marketing of new business models and portfolios, both internally and externally. The result is envisaged to be a decision framework for 'acceptance risk' analysis of CE based value propositions.

- Planned secondment(s): Aston, UL, EMF
- Lead supervisor: Prof. Casper Boks ([casper.boks@ntnu.no](mailto:casper.boks@ntnu.no))
- Duration: 36 months

### ***Design of circular solutions - How can we design circular value propositions?***

#### ESR10: Development of design strategies and methods/tools including user and business understanding (INP Grenoble)

Objectives: The research in this task focuses on searching for strategies, methods and tools that fit the new solutions that circular economy provides. Case studies at companies and their users will be conducted to understand their ways of working and requirements on circular solutions and design methods/tools. Based on this research new design strategies will be developed. This research will propose a methodology (in line with Task 4.2 and 4.3) to be used by companies supported by guidelines and tools for a new design strategy approach related to circular economy principles

- Planned secondment(s): NTNU, Cranfield, Alstom, EMF CE100 and EIT KIC RM companies
- Lead supervisor: Prof. Peggy Zwolinski ([Peggy.Zwolinski@g-scop.inpg.fr](mailto:Peggy.Zwolinski@g-scop.inpg.fr))
- Duration: 36 months

#### ESR11: Developing design methodologies based on circular solution demonstrators (Linköping University)

Objectives: The objective is to develop design methodologies based on circular solution demonstrators. The demonstrators will be developed based on different circular scenarios including product, services, maintenance, remanufacturing and material recycling in different ways. The demonstrators will be used in a bottom-up approach at companies to be able to generate practical design methodologies. Case studies will be performed with companies involved in the project along with companies in their networks. The case studies will include

- Study theory on how to develop design methodologies based on demonstrators
- Analyse case company to understand what circular scenarios that could be realised
- Study other circular solutions used by similar companies in the same and other industry sectors.
- Generate demonstrator based on the circular solutions
- Develop general design methodologies based on the results of the demonstrators

- Planned secondment(s): Aston, Cranfield, Toyota, Swedish manufacturers, e.g. EMF CE100 and EIT KIC RM companies
- Lead supervisor: Dr. Erik Sundin ([erik.sundin@liu.se](mailto:erik.sundin@liu.se))
- Duration: 36 months

#### ESR12: Adapting new technologies for circular solution design (TU Delft)

Objectives: The contribution of new technologies to strong circular propositions will be investigated. Case studies will be used to demonstrate the implementation of technologies like Internet of Things to data management in a circular solution context and additive manufacturing in relation to personalized design and remanufacturing. This will lead to validated design methodologies for optimal circular implementation of advanced technologies

- Planned secondment(s): Linköping University, Aston, EMF CE100 and EIT KIC RM companies
- Lead supervisors: Prof. Ruud Balkenende, Dr Conny Bakker and Dr Nancy Bocken TU Delft ([N.M.P.Bocken@tudelft.nl](mailto:N.M.P.Bocken@tudelft.nl))
- Duration: 36 months

## ***Systems - measuring economy-wide economic and environmental benefits and facilitating change at systems level***

### ESR13: Macro-level assessment of environmental implications of changes to PSS/circularity (Leiden University)

Objectives: Using case work from other ESRs and other bottom-up case studies, this research will analyse the environmental implications of circular business models at macro level. This will be done using detailed input output databases developed in other FP/H2020 projects (EXIOBASE), adapting input and output coefficients of sectors, and applying rebalancing procedures, and if possible, dynamic models to create an understanding of the macro economic and environmental impacts when a wide implementation of circular business models will be realised. This PhD will focus on the potential of biotic materials and static IO models. As can be seen ESR 13 and 14 will closely interact.

- Planned secondment(s): NTNU, Linköping, EMF
- Lead supervisor: prof. Arnold Tukker ([tukker@cml.leidenuniv.nl](mailto:tukker@cml.leidenuniv.nl))
- Duration: 36 months

### ESR14: Assessment of macro-economic implications of circular business models (Leiden University)

Objectives: Using casework from other ESRs and other bottom-up case studies, this research will analyse the implications of circular business model at macro level. This will be done using detailed input output databases developed in other FP/H2020 projects (EXIOBASE), adapting input and output coefficients of sectors, and applying rebalancing procedures, and if possible, dynamic models to create an understanding of the macro economic and environmental impacts when a wide implementation of circular business models will be realised. This PhD will focus on abiotic and energy materials and will endeavour to expand EXIOBASE with a dynamic model. The two PhDs together will give good insight what financial and environmental benefits shifts to circularity will have on the long term. As can be seen ESR 13 and 14 will closely interact.

- Planned secondment(s): NTNU, Linköping, EMF
- Lead supervisor: prof. Arnold Tukker ([tukker@cml.leidenuniv.nl](mailto:tukker@cml.leidenuniv.nl))
- Duration: 36 months

### ESR15: Simulation and analysis of policies and business activities for circular economy (Linköping University)

Objectives: Analysing the effectiveness of policies for resource efficiency at the micro level. This means that analysis of interplay between policies and companies' business activities will be conducted in the operational level. Long-term flows of materials from products and services as well as their related regulations will be analysed using System Dynamics (SD) technique. The analysis will be based on a real-life case chosen from industrial partners. After obtaining feedback from the industrial partners to the simulation results, this project delivers insights about policies with high potential for resource efficiency.

- Planned secondment(s): TUD and EMF
- Lead supervisor: Prof. Tomohiko Sakao ([tomohiko.sakao@liu.se](mailto:tomohiko.sakao@liu.se))
- Duration: 36 months

## **Public abstract Circ€uit**

Circ€uit – the Circular European Economy Innovative Training Network - creates a cohort of future leaders in research, policy & business through its innovative training programme focused on the Circular Economy. Circular business models, based on leasing or providing functionality rather than products, often called Product Services Systems, are widely seen as a way how business can create sustainable jobs and growth. The Ellen MacArthur Foundation (EMF) and McKinsey calculated that circular business will create billions of value. This opportunity has become an important development area for researchers engaged in the sustainability, engineering and design and business fields. Seven top universities well embedded in the EIT KIC Raw materials, supported by the EMF, their CE100 network and various companies propose here a multi-disciplinary approach to ensure a range of research perspectives are included across the circular field. 5 main areas of research are relevant to understand how to create such business models.

1. Businesses and business models: how to stimulate circular provisioning?
2. Supply chains: how to organize supply and delivery chains for circularity?
3. Users: how to motivate stimulate circular consumption?
4. Design: how to design circular value propositions?
5. Systems: How to ensure economic and environmental benefits can support for change to circularity?

We choose these areas as our main Work Packages, and appoint PhD students in each of these areas with as main goals:

1. Create new business model innovation across Europe that helps to support the economy while at the same time reduce ecological burden
2. Create a new, sustainable and cross-disciplinary network of trained experts who will have the skills, qualifications, and professional connections to drive future innovation.
3. Create new links between industry and academia in training ESRs to develop new approaches to PSS, which will help orgs to compete, create growth and innovation.

**Beneficiaries:** Leiden University / CML, Leiden, Netherlands, NTNU, Trondheim, Norway  
Delft University of Technology, Delft, Netherlands, Institut Polytechnique de Grenoble, Grenoble, France, Cranfield University, Cranfield, UK, Aston University, Birmingham, UK, Linköping University, Linköping, Sweden

**Partner organisations:** Ellen MacArthur Foundation, Winnow Solutions, Toyota Material Handling Europe AB

All beneficiaries already have – in different consortia – ample experience in cooperating in multi-disciplinary projects. Examples including the EIT KIC Raw Materials and a large number of other EU-funded projects (ResCoM, GreenElec, ERN, POLFREE, GENESI, SustainValue, etc). Via this, the beneficiaries have direct cooperation with many industrial partners (e.g. Mark & Spencers, Alstom, Philips, Barco, Nokia, Vodaphone, Toyota, Stena, TP Vision, etc). This gives ample of opportunities for working with industry in this project.

**Main contact for Circ€uit**

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## Appendix 1: Recruitment procedure – full description

Initially, the search for the appropriate candidates is based on normal recruitment strategies (i.e., publication on ec.europa.eu/euraxess, Nature and Science ads, etc.; personal contacts). The pre and final selection is made in a collective, fully transparent process, led by the Recruitment Committee (RC). The candidates apply for a maximum of three specific ESR projects and list their order of preference. Applications are made through email. The supervisors provide the names of their preferred candidates to the RC, which in its turn produces a short list of candidates. As such a maximum of 30 potential ESRs are invited to the Recruitment Event, which coincides with the pre-kick-off meeting (Leiden, 12 September 2016). Each candidate gives a presentation and is interviewed by the RC. The candidates are ranked and a collective decision is made. In this way a complementary team of ESRs can be assembled. In order to facilitate their travel, preselected candidates (from outside the Netherlands) will receive a fixed, lump sum of 250 euro to be paid by the prioritised Supervisor.

In the event that not all 15 ESRs can be recruited during the collective Recruitment Event, the recruitment procedure is “decentralised”, meaning that the involved Supervisors continue the search for good candidates. Recruitment problems are also, if still needed, discussed during the RC meeting (M5, M12) in order to deliver specific action plans to target specific networks relevant for the missing ESR positions. All details concerning the Recruitment Procedure principles are communicated on-line, so that potential ESRs know exactly what to expect and are stimulated to apply. All recruitment (pre and final selection) is in line with the European Charter for Researchers, providing the overarching framework for the roles, responsibilities of both researchers and employers. The Code of Conduct for the Recruitment of Researchers functions as a set of principles and ensures that the selection procedures are transparent and fair. The recruitment strategy fully complies with the Code of Conduct definition of merit. For example, merit is not just measured on researcher’s grades, but on a range of evaluation criteria, such as team work, interdisciplinary knowledge, soft skills and awareness of the policy impact of science. The RC has members of each gender and considers the promotion of equal opportunities and gender balance as part of the recruitment strategy. In view of the RRI principles, special efforts are made to attract women and ESRs from new EU member states. Among equally qualified applicants, women receive preferential consideration. Researchers are employed on fixed-term contracts and are registered as staff candidates for PhD degrees. Therefore, they are entitled to pension contributions, paid holidays, and other employment benefits, as governed by the universities and industrial companies.

Recruitment committee: The RC involves the General Coordinator (prof. Arnold Tukker) and one representative per Beneficiary. Its goal is to oversee the recruitment of the 15 ESRs during the recruitment event. Additionally, it follows up the training progress of the ESRs and looks at their career planning. Key dates

- 15th August 2016 Deadline for application for ESR positions
- 25th August 2016 Circulation of communication list ‘preselected candidates’
- 12th September 2016: Recruitment event (Leiden) for pre-selected candidates
- 30th September 2016: Circulation of communication list ‘recruited ESRs’
- October or November: initiation of ESR research work