



Renewable Energy Northeast Universities

EPSRC Centre for Doctoral Training

ReNU Partner Handbook



Engineering and
Physical Sciences
Research Council



EPSRC Centre for Doctoral Training (CDT) in Renewable Energy Northeast Universities (ReNU)

ReNU Partner Handbook
2020-21

Funded by



And three academic partners:



Northumbria
University
NEWCASTLE



Durham
University



Newcastle
University

ReNU Partner Handbook 2020-21

Contents

1	Welcome and introduction	4
1.1	The motivation	4
1.2	The benefits for ReNU partners	4
1.3	What is a CDT?	5
1.4	What is unique about ReNU?.....	6
1.5	What are ReNU’s research themes?.....	6
2	Being a ReNU partner	7
2.1	How can you become a ReNU partner and contribute?	7
2.2	Further advantages for ReNU partner	8
3	How does ReNU work?	9
3.1	Management committee members.....	9
3.2	Organisational Management.....	12
4	Synopsis of a PhD structure	12
	Appendix 1 – Ways for partners to support ReNU.....	13

1 Welcome and introduction

Welcome to the Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training (CDT) in Renewable Energy Northeast Universities (ReNU), led by Northumbria University.

1.1 The motivation

The EPSRC CDT in ReNU is driven by industry and market needs, indicating unprecedented growth in renewable and distributed energy to 2050. This growth is underpinned by global demand for electricity which will outstrip growth in demand for other sources by more than two to one (The drivers of global energy demand growth to 2050, 2016, McKinsey). A significant part of this demand will arise from vast numbers of distributed, but interconnected devices (estimated to reach 40 billion by 2024) serving sectors such as transport, communication, portable devices and healthcare.

It is forecast that employment in the renewable energy (RE) sector could reach up to 28.8 million globally by 2050 (IRENA: Global Energy Transformation: A Roadmap to 2050). In order to fulfil the market needs the UK has to position itself with highly skilled specialist doctoral graduates.

The distinctive remit of ReNU is to focus on materials innovations for small-to-medium scale energy conversion as well as storage technologies and their interaction in distributed systems that are sustainable and highly scalable.

1.2 The benefits for ReNU partners

- Contribute and forge doctoral graduates ready for employment in RD&I.
- Provide PhD project and group mini-projects addressing your needs and challenges.
- Access to leading academic (and their networks) across 3 Universities in the North East: Northumbria, Durham and Newcastle Universities.
- Access to Universities [facilities and services](#) for advanced characterisation, deposition and computing (as part of NECEM).
- Gateway to the UK national [Henry Royce Institute](#) (advanced materials R&I).
- Possible research placement at one of ReNU international partner institute.
- Participate in the Strategy Advisory Board (twice a year) and networking opportunities and sharing best practices in training.
- Engage with ReNU students, academic and partners during the yearly CDT week providing research relevant to their R&D activities and a pipeline of future skills.
- Facilitate an interdisciplinary collaboration platform across the RE sector for system integration.
- Showcase partner portfolio and engagement at an international platform during a 2-week annual research workshop at one of ReNU international partner institute (e.g. [Institute for Clean and Renewable Energy](#)).

See **section 2.1** on how to become a ReNU partner.

1.3 What is a CDT?

ReNU is one of 75 [Centres for Doctoral Training](#) (CDTs) announced by UK Research and Innovation (UKRI) to develop the skills needed for UK prosperity. In total, The Centres will be funded over 8.5 years through EPSRC (£444 million allocated) and 1,400 project partners (£386 million in cash and in-kind support), over the next 8 years, starting in October 2019. CDTs are one of multiple routes for EPSRC to [support Doctoral training](#).

The key features of CDTs should provide a training environment:

- Support a minimum of 50 students over five cohorts (with at least 10 students per cohort).
- Support student cohorts on a four-year doctorate (or equivalent), via a critical mass of supervisors (around 20-40) of internationally recognised research excellence and with a track record of doctoral supervision team.
- Students must benefit from the cohort approach to training through peer-to-peer learning both within cohorts and across them. Centres should provide students with opportunities to benefit from such support throughout the lifetime of their doctorate.
- All students should expect to undertake a significant, challenging and original research project leading to the award of a doctoral level degree in accordance with a university's (ies') standard regulations.
- Students should undertake a formal, assessable programme of taught coursework, which should develop and enhance technical interdisciplinary knowledge, as well as broadening skills;
- Innovative methods of delivering the coursework and integrating it with the students' research activity are particularly encouraged.
- Significant commitment to and support for the training environment by the hosts and key partners;
- Centres should have appropriate user/employer engagement in the research and training;
- There should be mechanisms by which students funded through other routes can benefit from the training experience offered by the centre, and for the centre to reach out to the broader research and user community.

However, the training offered, research themes and operation/organisation will differ between CDTs.

1.4 What is unique about ReNU?

Over the next 8 years, ReNU will create a pipeline of highly skilled doctoral graduates that will drive forward innovation in small scale renewable and sustainable distributed energy (DE). ReNU is a collaboration between three major UK universities (Durham, Newcastle and Northumbria) which are uniquely co-located in the North East of England.

The importance of renewable energy (RE) materials and technologies to the UK economy is fundamental and the next energy revolution will stem from our ever-increasing demand for electricity. This includes the transition to zero carbon transportation (not just cars but also new personal mobility devices), vast numbers of interconnected personal devices and sustainable buildings. ReNU will help meet this demand by creating high quality people who have excellent scientific and engineering skills along with specialist training in business, innovation and internationalisation.

In addition to individual institutional training programme (i.e. student handbook), ReNU will provide cohort training with the objectives of:

1. Creating a pipeline of doctoral graduates with outstanding problem solving abilities to enable UK commercial development and exploitation of RE and sustainable DE technologies;
2. Providing a comprehensive training experience that is inherently interdisciplinary, international and includes key business and innovation training.
3. Making innovation accessible to all participating businesses through a research development project specifically addressing challenges or opportunities identified by your business in partnership with ReNU.

1.5 What are ReNU's research themes?

The aim of ReNU is to create a new generation of specialists that are capable of tackling the most challenging problems, supercharged with business and innovation skills to exploit new opportunities in small-to-medium scale (<50 MW) RE and sustainable DE. Nine themes have been defined for ReNU's cohort to explore as listed below:

- Batteries and storage,
- Biofuels,
- Energy Conversion, Transmission and Delivery on the Grid,
- Earth abundant materials,
- Fuel cells and hydrogen,
- Marine, wind and tidal turbines,
- Photovoltaics,
- Smart grid and systems,
- Solar fuels.

2 Being a ReNU partner

ReNU is currently backed by a strong portfolio of 36 partners including:

- 27 companies: 12 SMEs and 15 multinationals,
- 9 non-profit organisations, key networks, local government and prestigious academic institutes across the globe.

The combination of these partners and academic excellence will ensure that ReNU provides a key contribution to the Clean Growth Grand Challenge identified in the UK Government's Industrial Strategy. The current ReNU partners are given in Fig. 1 and on the [ReNU website](#).

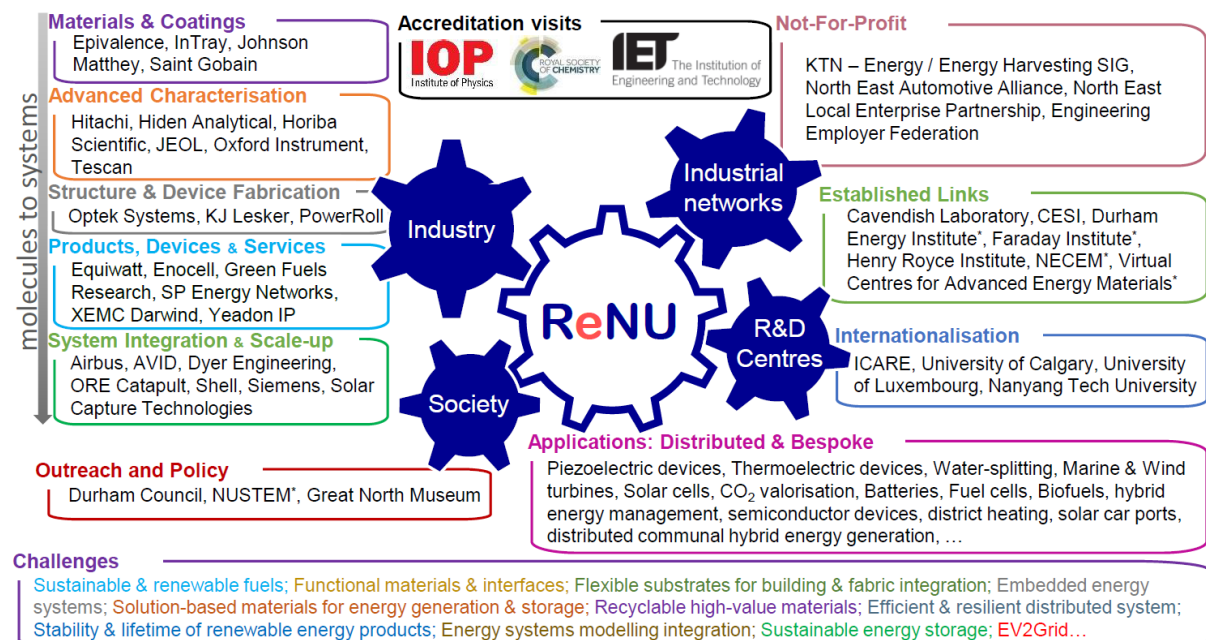


Fig. 1 – Landscape of current ReNU's partners, challenges and applications.

Any academic or non-academic organisations (public, private or third sector) with interests in the research themes of ReNU are welcome to contact Samantha Tennant, Business Development Manager for ReNU, (Samantha.tennant@northumbria.ac.uk) for joining ReNU as a partner(*).

2.1 How can you become a ReNU partner and contribute?

The involvement of partners in the ReNU programme is paramount to ensure that the students' experience and developed skills are relevant to the industry challenge relating to a sustainable and renewable energy sources deployment of the future. ReNU partners are encouraged to steer research topics of cohorts via attendance to the Strategic Advisory Board meetings. In

(*). The management committee of ReNU will make the final decision and reserves the right to decline if it is believed that there is: (1) Excessive duplication of existing partners; (2) Unbalance of partners across themes; (3) Ineligible source of funding being put forward. Existing ReNU Partners may also resign if they so do wish, but will lose the benefits and access to the programme of ReNU.

addition to the benefits for ReNU partners listed in section 1.2, logo/branding of individual partners are displayed on the website (and in ReNU promotional presentation and event where applicable).

There are also multiple ways in which ReNU partners can contribute, described below under either direct or in-kind contributions (contact renu@northumbria.ac.uk for more details):

1) Direct contributions:

Up to 100% sponsorship of a ReNU studentship where the partner can directly influence the project being investigated over a 4-year period (e.g. may be through partners' staff development route via part-time ReNU studentship). The total cost of a ReNU studentship is £100,000 (£25,000 per year) and part sponsorship below 100% is possible. The direct cash contribution can include: fees, annual living allowance and/or Research Training. Direct contribution from a partner also ensure a direct and free access to facilities and services as provided in section 1.2.

2) In-kind contributions:

- Provide research placements,
- Contribute to ReNU training delivery via direct specialism lectures or site visits by cohort,
- Provide/contribute to cohorts mini-projects (industry challenge or whole energy system).

Note that collaborative agreements and any related IP for individual studentships are to be finalised between the partner(s) and the host university(ies).

If you are interested and think that you can contribute to / benefit from ReNU, you can contact Samantha Tennant, Business Development Manager for ReNU, (Samantha.tennant@northumbria.ac.uk) for further information.

2.2 Further advantages for ReNU partner

ReNU will deliver projects that will drive forward innovation in renewable and sustainable distributed energy to businesses of all sizes, encouraging collaboration and introducing pioneering thinking. ReNU will either organise or have presence over the coming years, which will promote partner activities and engagement on local, national and international stages, e.g. Innovation Days, Lunch and Learn Sessions, Sandpit Days, Innovation Platform (online repository of innovation) as a subscription service based on a company's level of contribution.

ReNU will create a new generation of specialists that are capable of tackling the most challenging problems to exploit new opportunities in renewable and sustainable distributed energy. Participating businesses can co-design a research project based on their business

need, or contribute to an existing project, if in conjunction with business requirements. A PhD student will be recruited and assigned to work exclusively on that project.

- A four-year R&D project specifically addressing challenges / opportunities identified by your business.
- Access to new products, services or processes arising from the project, providing competitive edge, access to new markets and improved bottom line.
- Access to highly-skilled talent – PhD student plus an academic expert in a relevant field.
- ReNU students are co-located in close proximities from one another with the flexibility to carry out research in all 3 universities.
- Access to training programmes and CPD provision to help upskill existing staff (i.e. potential part-time ReNU student) to be more effective in the roles / progress to senior positions.
- Networking opportunities and knowledge sharing with other companies involved in the programme – from large corporates to innovative start-ups, scale-ups and SME.
- Embedding innovative ways of working with academia which could lead to joint applications for future funding.

3 How does ReNU work?

ReNU is a partnership between Northumbria, Newcastle and Durham Universities. For administrative purposes, Northumbria is the lead institution, but all universities play an equal role in decision-making and delivery of ReNU.

3.1 Management committee members

Key contact details of the Principal Investigator, ReNU Directors, Centre manager and administrator, as well as the delivery group chairs are given below (for more information consult our website: <https://renu.northumbria.ac.uk/>).

General enquiries: renu@northumbria.ac.uk

ReNU Chair and Principal investigator:



Prof Neil S. Beattie
neil.beattie@northumbria.ac.uk

Centre Manager:



Dr Yongtao Qu
y.qu@northumbria.ac.uk

Centre administrator:



Li Chin Khor
li.khor@dnorthumbria.ac.uk

Directors:



Dr Vincent Barrioz
Vincent.Barrioz@northumbria.ac.uk



Dr Elizabeth Gibson
elizabeth.gibson@ncl.ac.uk



Dr Chris Groves
chris.groves@durham.ac.uk

Delivery Group Chairs:



Dr Anh Phan – Training
Programme
Anh.phan@ncl.ac.uk



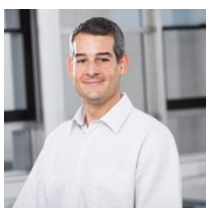
Dr Budhika Mendis – Equality,
Diversity Inclusion
b.g.mendis@durham.ac.uk



Dr Haimeng Wu –
Partner Portfolio
Haimeng.wu@northumbria.ac.uk



Dr John Errington –
Engagement
john.errington@ncl.ac.uk



Prof Guillaume Zoppi –
Operations & Finance
guillaume.zoppi@northumbria.ac.uk

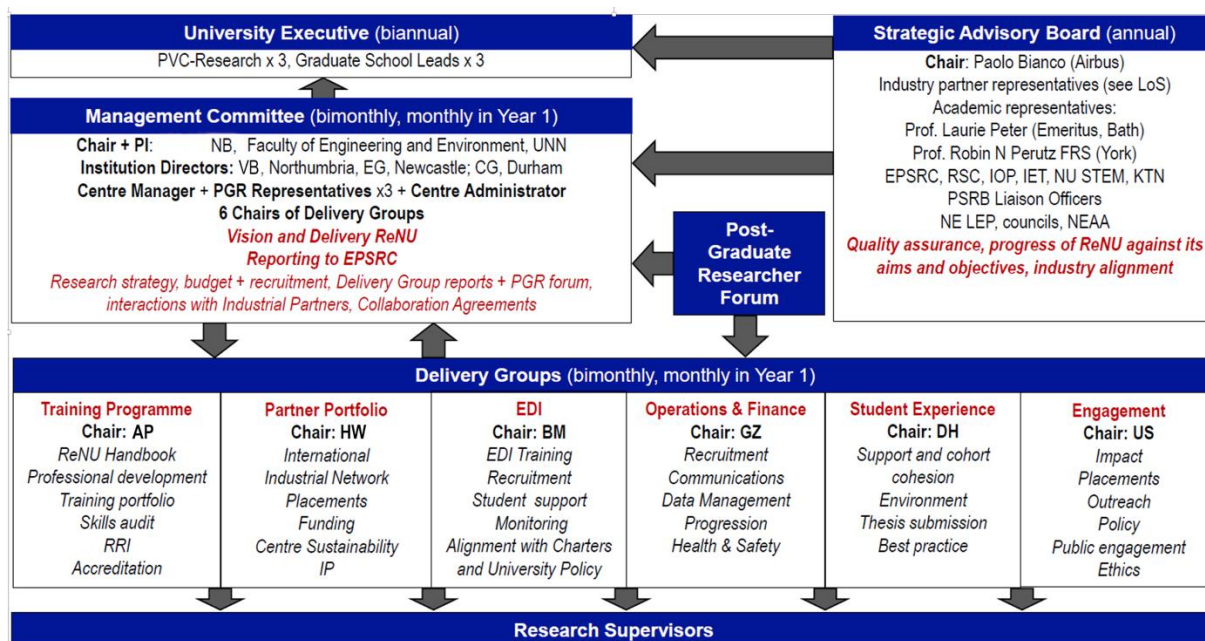


Dr Douglas Halliday – Student
Experience
d.p.halliday@durham.ac.uk

3.2 Organisational Management

The members of the management committee (ReNUMC) (see section 3.1) ensures the day-to-day running of the EPSRC CDT in ReNU. Along with Professional Services staff, the ReNUMC is supported by additional academics (supervisors) and representatives from end-user organisations (summarised in **Error! Reference source not found.2**).

Table 2 – Organisational management of ReNU



4 Synopsis of a PhD structure

ReNU students are postgraduate students who are funded through the ReNU programme. Stipends are funds to the students to cover their living expenses while undertaking postgraduate training/research leading to the award of a postgraduate degree. Fees for Home/EU students are the amount payable to the research organisation for the students to enrol. Research Training Support Grant (RTSG) relates to the funds available to the students during their research for travel, consumables, and further training. The studentship is the term used for the funding award made by a research organisation (Durham, Newcastle or Northumbria Universities) to a student for the purpose of undertaking postgraduate training leading to the award of a postgraduate degree.

ReNU students follow a structured route over a 4-year period full-time equivalent, which includes the equivalent of 6 months compulsory training activities with other ReNU students (and on occasion aligned PhD students – see [description of aligned students](#)). The students may also take part in extra specialised placements and optional training relating to their research.

Appendix 1 – Ways for partners to support ReNU

