translate

waste heat to electricity

D4.4

2nd Annual report on dissemination, exploitation and communication activities

WP4 TRANSLATE Dissemination, Exploitation and Communication

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TECHNISCHE UNIVERSITÄT DARMSTADT

UNIVERSITY OF LATVIA

CIDETE EL ARTE DE REFRIGERAR TERMOELECTRICIDAD

UCC ACADEMY

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Contents

Executive Summary

The 2nd Annual report on dissemination, exploitation and communication activities (D4.3) is a deliverable of TRANSLATE Work Package 4. This deliverable is part of Task 4.2 “Implementation of the Dissemination, Exploitation and Communication (DEC) Plan”.

Sections 2 and 3 include a high-level overview of our strategy for dissemination, exploitation and communication, as derived from our DEC plan (Deliverable 4.1).

Sections 4-6 summarise our key activities over the past year (1 June 2022 – 31 May 2023), broken down by Communication, Dissemination and Exploitation activities.

Table 1 summarises the key objectives, audiences, channels, KPIs and progress to date for DEC activities.

About TRANSLATE

Tackling climate change requires a radical shift in how we produce and consume energy, away from fossil fuel burning and towards clean, renewable sources of energy. Yet every day, it's estimated that 70% of all the energy produced from sources such as power generators, factories, and homes is lost in the form of heat, which evaporates away into the atmosphere. This wasted heat is one of the largest sources of clean and inexpensive energies available, and yet it is currently untapped.

Although technologies for converting waste heat into electrical energy have been around for a long time, there is still no environmentally sustainable and efficient technology platform available for the harvesting of low-grade waste heat.

The central aim of TRANSLATE is to develop a new proof-of-concept nanofluidic platform technology based on the flux of ions in nanochannels, leading to a breakthrough in versatile and sustainable energy harvesting and storage.

1. Introduction

The European Commission's commitment to Responsible Research and Innovation (RRI) and its broader 'Science with and for Society' objective aims to ensure that EU-funded research helps meet the current social, ethical, and political demands in society. Good dissemination, exploitation and communication is a critical component of fulfilling this commitment which the TRANSLATE project aims to achieve through the implementation of an effective strategy across all three areas.

According to the Horizon 2020 Online Manual, **dissemination** refers to sharing research results with potential users including peers in the research field, industry, other commercial players and policymakers, **exploitation** refers to the use of results for commercial purposes or in public policy making, and **communication** refers to providing targeted information to multiple audiences (including the media and the public), in a strategic and effective manner and possibly engaging in a two-way exchange. Whilst all three of these areas of engagement are linked, they also need to be considered separately when devising an effective DEC plan. TRANSLATE's DEC plan focusses on the key objectives, audiences, messages and channels for dissemination and communication, as well as the procedures put in place to facilitate exploitation.

2. Strategy for TRANSLATE dissemination and communication

The following sections outline our overall strategy for dissemination and communication which is summarised in Table 1. This strategy is structured according to the following questions:

- Why? – our key objectives
- Who? – the main audiences we want to reach
- What? – the main messages we want to deliver to these target audiences
- Where? – the channels through which we want to deliver these messages
- When? – the key events and activities that are taking place in order to implement our strategy

The content in these sections has been informed by a survey that was conducted at the beginning of the project in June 2021, along with a follow up workshop which was held to discuss the survey results. Both of these activities were led by UCC Academy with inputs gathered from all partners.

2.1 Why – Key Objectives

In order to implement a successful dissemination and communication strategy, we first had to tease out and agree on our main objectives. The results of the survey (Figure 1) and further discussion revealed that the three main overarching objectives are to:

1. Raise **awareness and understanding** of the research in TRANSLATE amongst the general public, specifically its importance, challenges and advances, and how it is trying to solve energy and environmental issues.
2. **Disseminate project results** at European and international conferences and industry events.
3. **Engage with similar projects** in order to achieve greater impact.

Further details on these objectives including Key Performance Indicators (KPIs) are covered in Table 1 to ensure they are SMART (Specific, Measurable, Achievable, Relevant and Time-bound).

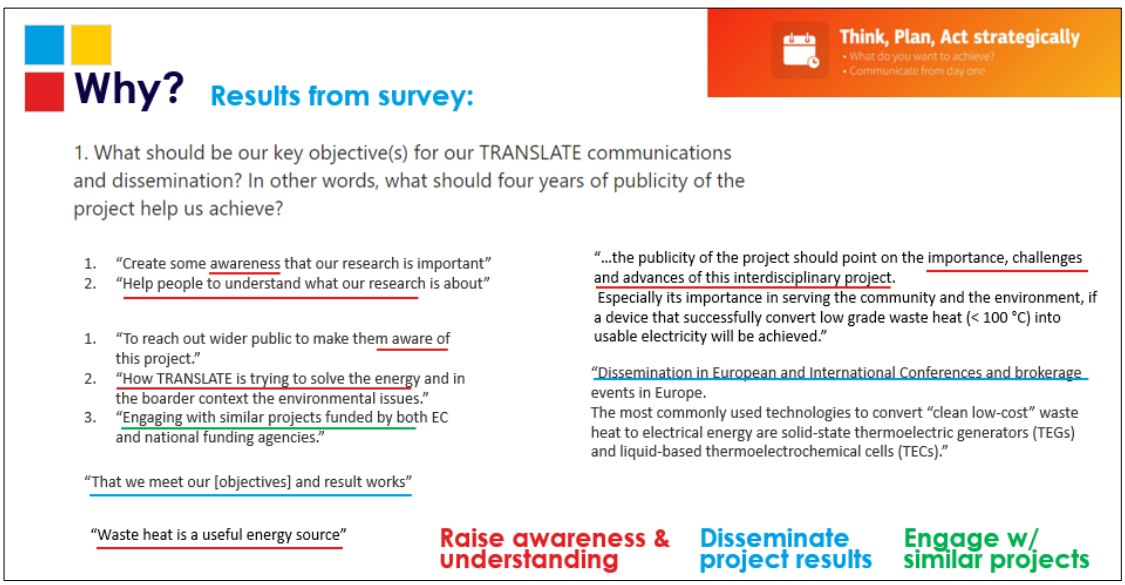

Figure 1: Summary of partner responses to an online survey on TRANSLATE communication and dissemination objectives, June 2021 – What should be our key objective(s) for our TRANSLATE communications and dissemination?

2.2 Who – Key Audiences

Identifying our main target audiences was the next component to defining our strategy. These include:

1. **Industry partners** and future users of the TRANSLATE device
2. **Researchers and academic colleagues** (in materials science, energy harvesting, and waste heat capture)
3. European **research funders** (current and future) interested in sustainable energy projects
4. **Public and community groups** who are interested in emerging sustainable tech

The first three audiences were chosen due to the nature of TRANSLATE as a proof-of-concept project. Our efforts in dissemination will target these audiences specifically. An important part of our overall strategy is also to engage the general public with our communication and outreach activities. This will help achieve our objective of raising awareness and understanding of the research in TRANSLATE and its importance in the wider context of the energy and environmental issues facing society.

2.3 What – Key Messages

Once our target audiences were identified, we then captured the main messages we want to deliver. The survey conducted with the consortium helped to shape this messaging which broadly fits under three key themes which are:

1. The **wider societal and environmental benefits** that the project's aim will achieve.
2. The **applicability of the technology** in TRANSLATE to a wide range of industries.
3. The **collaborative and interdisciplinary** nature of the project.

These themes have been incorporated in the messaging for the TRANSLATE project website (translate-energy.eu) which went live on 1st October 2021. Specific messaging under these themes which will be employed to reach our target audiences are included in Table 1.

In addition to our specific messaging about TRANSLATE, all forms of dissemination, exploitation and communication will acknowledge EU funding. This is built into our website and social media channels, as well as our project templates for presentations, posters, and publications.

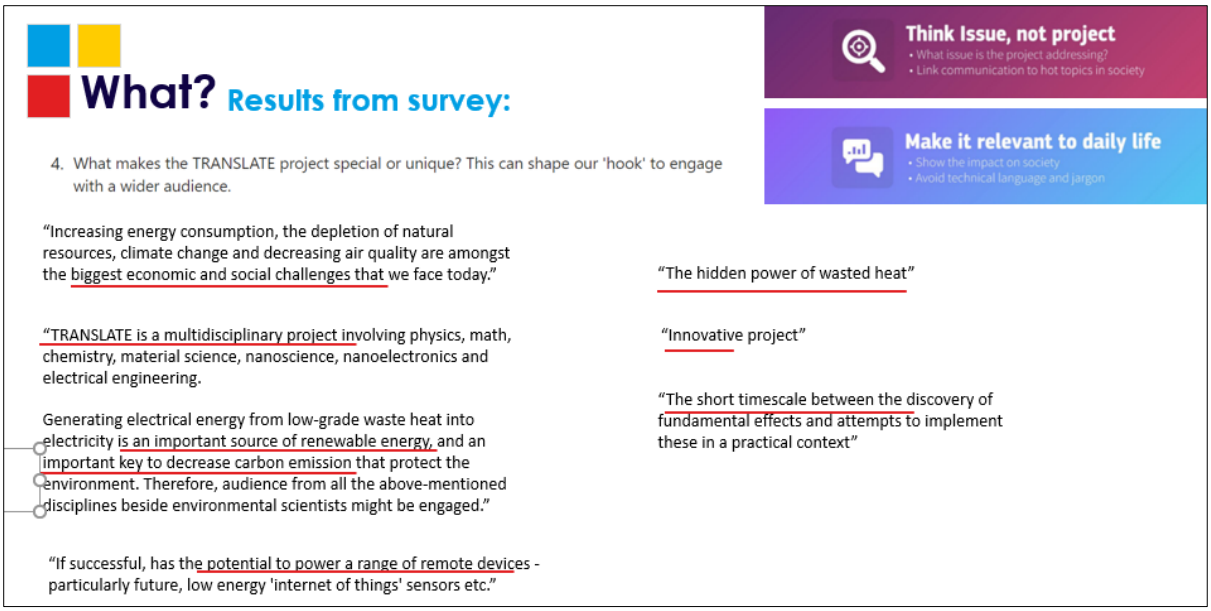

Figure 2: Summary of partner responses to an online survey on TRANSLATE communication and dissemination objectives, June 2021 – What makes the TRANSLATE project special or unique?

2.4 Where – Key Channels and Key Performance Indicators (KPIs)

Finally, we defined the various channels that will be employed over the course of TRANSLATE to ensure that the right message is delivered to our target audiences. Some of these channels will be used solely for dissemination or communication and others will be used for both activities. The effectiveness of these channels in achieving our objectives will be measured by Key Performance Indicators (KPIs). A summary of the main channels and KPIs is included in Table 1 below.

2.4.1 Publications

Publications, both scientific and non-scientific, are an important channel in our overall dissemination and communication strategy. Scientific publications will form the backbone of the dissemination strategy, with results from the project being disseminated to key scientific communities across different peer-reviewed, subject-specific journals. All scientific publications will be made open access, with the data made open access via our community page on the open access repository Zenodo. Non-scientific publications including articles published in the media will be important for communicating scientific results from the project to the general public, and will be facilitated by engaging press releases. Informal publications in the form of blog posts which will be hosted on the TRANSLATE website will be key for driving engagement on the website and communicating topics related to the project that have relevance amongst the general public.

KPIs: Number of publications, citations, article views and downloads.

2.4.2 Events

Events will facilitate two-way engagement with our target audiences which will be important for gathering feedback on both the project and our overall strategy in dissemination and communication. As with scientific publications, conferences will facilitate the dissemination of results from the project to the research community. Industry and networking events will become particularly important in years 3 and 4 of the project when there are more tangible outputs. In terms of communication, community and outreach events will be important to involve and integrate the public in TRANSLATE research activities, and will be necessary to achieve our objective of raising awareness and understanding of the research in TRANSLATE amongst the general public.

KPIs: Number of events attended/organised, qualitative feedback from surveys, anecdotal feedback from consortium participants and number of contacts/collaborations.

2.4.3 Website

The TRANSLATE project website (translate-energy.eu) is integral to our dissemination and communication strategy as it is the focal point for sharing progress updates on the project. The aim of the website is to be a resource to find out more about the project, with content that is relevant, accessible, accurate and up to date for our key audiences. As well as information about the project research and team, the website also includes a News & Events page for press releases, blogs, newsletters and upcoming events, and a Research page aimed at research and industry that will include links to all project publications, data and materials. On all pages, visitors are encouraged to follow the project's progress through our social media channels.

KPIs: Page views, website visits and bounce rate.

2.4.4 Social media

Given our target audiences, the social media platforms that were selected as the most relevant to our strategy are LinkedIn and Twitter. Accounts for both of these platforms were set up in June 2021 (LinkedIn: linkedin.com/company/translate-energy; Twitter: twitter.com/TranslateEnergy). Both platforms will be important for disseminating short summaries of project milestones including research publications and outputs, with Twitter being most important for reaching the research community and funders, and LinkedIn being most important for reaching industry professionals. These platforms are also vital for our communication strategy as a place for sharing blog posts and articles on results from the project relevant to the general public, and for learning about upcoming community and outreach events applicable to TRANSLATE.

KPIs: Number of followers, number of post likes and retweets.

2.4.5 Video

Video has become increasingly relevant to science dissemination and communication in recent years and will form part of our strategy for distilling complex information in an engaging format. As part of the initial launch of TRANSLATE, we created a video summarising the main aims, objectives and partners involved in the project which is featured on the project website homepage. We plan to create a number of videos over the course of the project to facilitate the dissemination and communication of our results and outputs.
KPIs: Number of videos and video views.

2.4.6 Resources and materials

As mentioned in section 2.4.3 above, we have created an area of the TRANSLATE website on the Research page that is dedicated to hosting resources and materials from the project. These resources will take many forms including infographics for communicating graphical representations of research outputs, as well as technology fact sheets for disseminating the benefits, uses and Technology Readiness Levels (TRLs) of project outputs. We plan to highlight these materials at conferences and events, on social media and in an annual newsletter.
KPIs: Downloads and page views.

2.5 When – Key Events

The most impactful dissemination and communication activities will take place in years 3-4 when the project will have a significant amount of research output. Between now and then however, there are many events and activities that TRANSLATE will participate in to build networks and raise awareness of the project. The TRANSLATE DEC Plan includes a list of these planned dissemination and communication activities which is continually added to over the course of the project.

Table 1: Summary of the TRANSLATE dissemination and communication strategy

Key objectives	Key audiences	Key messages	Key channels and KPIs	Progress towards targets (as of May 29th, 2023)
1) Raise awareness and understanding of the research in TRANSLATE amongst the general public, specifically its importance, challenges and advances, and how it is trying to solve energy and environmental issues.	1) Members of the public and community groups who are interested in emerging sustainable tech	"Waste heat energy discharged into the atmosphere is one of the largest sources of clean, fuel-free and inexpensive energies available." "Generating electrical energy from low-grade waste heat into electricity is an important source of renewable energy, and is key to decreasing carbon emissions." "Accessing this largely untapped energy source could help tackle some of the biggest economic and social challenges we face today including climate change and the depletion of natural resources."	• Social media (Twitter) e.g. retweeting content from the media about environmental issues and highlighting the work in TRANSLATE; **KPI(s):** Number of followers; **Target:** At least 50 followers by the end of year 1 and 300 followers by end of the project. • Video e.g. summary of research outputs in accessible language; **KPI(s):** Number of videos and video views; **Target:** At least 1 video by the end of year 1 and at least 4 videos by the end of the project. • Blog posts e.g. topics such as the link between TRANSLATE and wider societal issues; **KPI(s):** Number of blog posts and page views; **Target:** At least 2 blog posts by the end of year 1 and at least 6 blog posts by the end of the project. • Press releases e.g. communicating results from scientific papers that are interesting for a general audience; **KPI(s):** Number of press releases and	• 101 followers on Twitter; 106 followers on LinkedIn • 9 videos created – 1 as a project introduction and 8 as a part of a video series 'What's Exciting About TRANSLATE?' – see YouTube channel • 12 blog posts on the project website – see News & Events section of website • 3 press releases (1 UCC, 2 UL) – see News & Events section of website

			amount of media coverage; **Target:** At least 2 press release by the end of year 1 and at least 6 press releases by the end of the project. • Events e.g. outreach events to engage in two-way communication with the public; **KPI(s):** Number of events attended and feedback from events via surveys; **Target:** Participation in at least 1 outreach event by the end of year 1 and at least 4 outreach events by the end of the project.	• Participation in 5 outreach events (details in Section 4 below)
2) Disseminate project results at European and international conferences and industry events. 3) Engage with similar projects in order to achieve greater impact.	2) Researchers and academic colleagues (in materials science, energy harvesting, and waste heat capture)	"Nanochannels, fabricated from cheap Earth-abundant materials and infiltrated with ionic conductive liquids, have the potential to play a key role in the capture and conversion of low-grade waste heat into electrical energy." "The individual processes in the TRANSLATE technology will work synergistically together at the nanoscale level to create an energy harvesting technology that has the potential to exceed the efficiency of the current state-of-the-art thermoelectric	• Scientific papers in peer reviewed journals e.g. *Physical Review Letters, Nature Energy, Nano Energy, ACS Applied Energy Materials and Advanced Energy Materials*; **KPI(s):** Number of papers and citations: **Target:** 12 papers by the end of the project (all open access). • Scientific conferences e.g. MRS, EMRS and APS, as well as other smaller subject-specific conferences; **KPI(s):** Number of conference attended and number of conference presentations; **Target:** At least 3 conference presentations by the end of year 1, at least 20 conference presentations by the end of the project.	• 1 scientific paper published (details in Section 5 below) • Participation in 7 scientific conferences (details in Section 5 below)

		generators and liquid-based thermoelectrochemical cells."	• Social media (Twitter) e.g. short summaries of research progress and results; **KPI(s):** Number of followers; **Target:** At least 50 followers by the end of year 1, 300 followers by end of the project. • Events e.g. EU energy initiatives involving other similar EU projects such as ReUseHeat, COOL DH, REWARDHeat and Waste-not; **KPI(s):** Number of engagements/collaborations; **Target:** At least one engagement before the end of the year and at least 4 by the end of the project	• See social media stats above • TRANSLATE is part of the EIC 'Energy harvesting, conversion & recovery' portfolio – participated in 1 online meeting with EU programme manager (details in Section 6 below)
	3) European research funders (current and future) interested in sustainable energy projects	"Generating electrical energy from low-grade waste heat is a key enabler to meet the growing global energy demand, whilst reducing Europe's carbon footprint and supporting the realisation of the UN SDG7-Energy plan, the European Green Deal strategy and Europe's binding renewable energy targets for 2030." "TRANSLATE is a multidisciplinary project involving physics, math,	• Social media (Twitter and LinkedIn) e.g. short summaries of project milestones on Twitter and LinkedIn, tagging relevant hashtags and accounts such as European Innovation Council, European Environment Agency, EU Climate Action, UN Environment Programme; **KPI(s):** Number of followers; **Target:** At least 50 followers by the end of year 1, 300 followers by end of the project. • Events e.g. EU project networking events such as FET Briefing's 'Research Meets Industry' event; KPI(s): Number of events attended, number of	• See social media stats above • Participation in 1 EU project networking event (details in Section 6 below)

		chemistry, material science, nanoscience, nanoelectronics and electrical engineering."	contacts/collaborations: **Target:** At least 1 EU event attended by the end of the year, at least 4 attended over the course of the project. • Websites e.g. CORDIS platform and Horizon Results Platform; **KPI(s):** Number of contacts made from project profiles; **Target:** At least one contact made by end of the year, at least 4 contacts made by end of the project.	• Published on Innovation Radar (details in Section 6 below)
	4) Industry partners and future users of the TRANSLATE device	"The technology in TRANSLATE will improve the energy efficiency of many devices and systems, such as combustion engines, industrial manufacturing and conversion processes, by recovering large amounts of waste heat from these systems and converting it to useable electricity." "TRANSLATE's approach of generating electrical energy from low-grade waste heat and from very small temperature differentials has the potential to revolutionise the field of waste	• Industry events e.g. Dublin Tech Summit; **KPI(s):** Number of events attended; Target: At least 1 industry event attended by the end of the year, at least 4 attended over the course of the project. • Social media (LinkedIn) e.g. short summaries of research progress and results; **KPI(s):** Number of followers; **Target:** At least 50 followers by the end of year 1, 300 followers by end of the project. • Project resources e.g. technology factsheets and newsletter; **KPI(s):** Number of artefacts produced; **Target:** An annual newsletter and at least 2 technology factsheets by the end of the project.	• Participation in 1 industry event (details in Section 6 below) • See social media stats above • Issue 1 of the annual newsletter published in June 2022 with Issue 2 expected to be published in June 2023

		heat harvesting for both portable electronic devices and wireless stationary applications, with scope to extend into other areas.”		

3. Strategy for TRANSLATE Exploitation

The objective of exploitation is to ensure that the research outputs from TRANSLATE are utilised. In many cases this use will be commercial, but there may also be uses that are oriented towards research and policy making. It is fully expected that the project will generate results with real potential for commercial exploitation. The TRANSLATE Executive Board are tasked with the responsibility of managing the exploitation of project results and outcomes. This includes ensuring potentially valuable IP is captured, evaluated and protected by the appropriate means as the project progresses. This role will become more important towards the latter end of the project when there are tangible outputs from the project for exploitation.

The dissemination and communication strategy outlined in the proceeding sections will facilitate exploitation by raising awareness of the research outputs from TRANSLATE amongst industry and policy representatives. A number of target companies have already been identified, including Analog Devices (ADI), who provided a letter of support at the time of the project proposal expressing their interest in the technology being developed in TRANSLATE. New opportunities including potential companies and uses for the technology that come to light over the course of the project will also be explored and discussed amongst the Executive Board for their potential within the TRANSLATE exploitation strategy.

The procedures for the management of any IP generated in the project have been outlined and agreed upon in the Consortium Agreement (submitted at month 2). Once the IP agreements for the TRANSLATE technology have been put in place, it is at this stage that discussions will begin with interested companies. This will be facilitated by the technology transfer offices from the relevant partners. As per Article 28 of the Grant Agreement, each partner will take measures to ensure exploitation of the results in TRANSLATE, even beyond the end of the grant (for up to four years), by:

(a) using them in further research activities (outside the action);
(b) developing, creating or marketing a product or process;
(c) creating and providing a service, or
(d) using them in standardisation activities.

4. Communication activities in year 2

4.1 Events and campaigns

As part of the DEC plan implementation, TRANSLATE has organised and participated in several public events and social media campaigns in the past year to raise awareness of the project and encourage active participation from the general public:

- **European Researchers' Night at the University of Latvia (30th September 2022)** TRANSLATE took part in University of Latvia's Researchers' Night (estimated audience ~1,000 families) where TRANSLATE researchers Raimonds Meija, Valerii Malyshev and Irina Oliševeca welcomed visitors to the lab and shared their work on nano- and thermoelectric materials (Figure 3).

Figure 3 – UL researcher R. Meija participating in University of Latvia's Researcher's Night

- **School Outreach Programme, University of Latvia (21st October 2022**) TRANSLATE researcher Irina Oliseveca from the University of Latvia participated in a school outreach programme in Latvia by giving a presentation about her profession as a Researcher of Chemistry and an overview of the TRANSLATE project (~30 children in the age range of 10 to 12) (Figure 4).

Figure 4 - Irina Oliseveca presenting for the School Outreach Programme 2022

- **'Celebrate Science', Cork Science Festival 2022 (13th November 2022)**
  TRANSLATE took part in the 'Celebrate Science' family day in Western Gateway Building, UCC as part of Cork Science Festival 2022. It was a busy and exciting day full of interactive science activities for all ages. TRANSLATE activities included 'Thermovision', 'Under the microscope' and a thermoelectric demo, as well as interactive games showcasing the importance of clean energy, waste heat capture, and materials science (estimated audience ~2,000 visitors to TRANSLATE stand). This event was a joint effort with fellow Horizon 2020 FET-Open project RADICAL. Volunteers from the project included PI Justin Holmes, Ievgen Nedrygailov, Tamela Maciel, Rupa Ranjani Palanisamy, Anjali Ashokan and Amit Tanwar (Figures 5 & 6).

Figure 5 - TRANSLATE and RADICAL volunteers participating in Cork Science Festival 2022

Figure 6 - Children and families gathered at the TRANSLATE stall during the Celebrate Science initiative for the Cork Science Festival.

- **International Women in Science Day campaign (11th February – 17th February 2023)**
  TRANSLATE honoured women in STEM by conducting a week-long social media campaign on Twitter and LinkedIn (Figure 7). During the campaign, female scientists from the TRANSLATE team shared their perspectives on being women in science. They highlighted challenges they have faced and shared messages of inspiration for

girls and women interested in pursuing careers in science. The campaign had 2,353 impressions, amplifying the voices of women in STEM and promoting diversity and inclusion in the field.

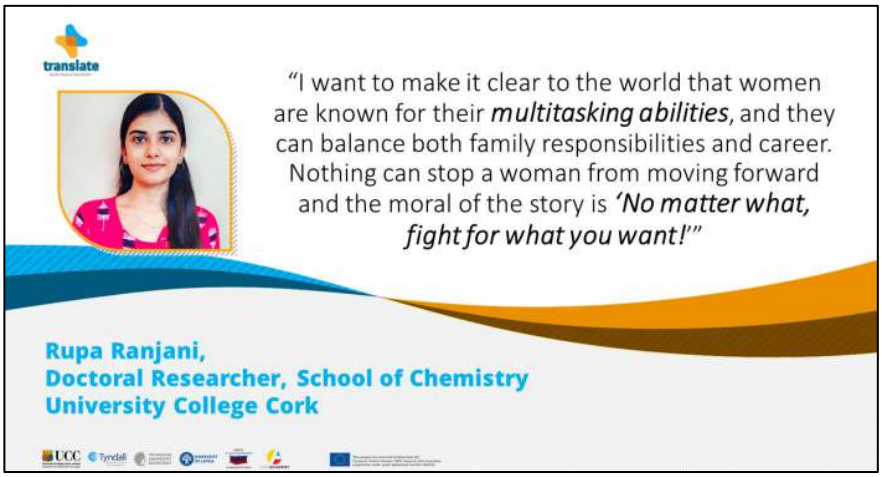

Figure 7: Example image from TRANSLATE International Women in Science Day social media campaign

- **Partnering for Engaged Research: Environment and Climate Action (29th March 2023)**
  Access Europe, in collaboration with University College Cork, organised an in-person networking event in Cork City which was attended by TRANSLATE team member Abhisweta Bhattacharjee (Figure 8). The event brought together civil society representatives and researchers working in the environment and climate space to foster networking opportunities and facilitate discussions on accessing funding for engaged research projects (9 connections made for potential future collaborations).

Figure 8 - Researchers and community partners in action at Partnering for Engaged Research: Environment and Climate Action

4.2 Website

The TRANSLATE website continues to be a primary communication channel for the project, with content posted regularly in the form of blog posts, event updates and publications such as the annual newsletter. Website activity and engagement is monitored via Google Analytics. In the past year, the website has received 1,710 page views with an average engagement time of 4 minutes 51 seconds.

UCC Academy manages the website with support from an external website hosting and maintenance supplier, Buchanan Solutions. The website will continue to evolve as the TRANSLATE project progresses, with a focus on increasing activity and content during the latter phase of the project in years 3-4.

4.3 Social media

4.3.1 Twitter

Twitter is used primarily for networking, finding out about key events, and raising awareness of the TRANSLATE project through regular, relevant and engaging posts. As of 28th May 2023, the TRANSLATE Twitter account 101 followers, primarily from the energy harvesting, clean energy, and environmental sustainability communities. The secondary

audience is European environmental agencies and research funders. The account has received 52,710 impressions to date and the average engagement rate on the account is 4.23% (industry standard for good engagement: 0.5-1%).

4.3.2 LinkedIn

The TRANSLATE LinkedIn account is on par with Twitter at 106 followers as of 28th May 2023. LinkedIn posts from the project page have received 18,191 impressions to date. The average engagement rate on the account is 9.5% (industry standard for good engagement: 2-3%).

4.4 Video

A project YouTube channel was created in August 2022 which stores all of TRANSLATE's video content (9 videos to date). During Year 2 we published 8 new videos as part of a video series on 'What's Exciting About TRANSLATE?' (Figure 9). In this series, consortium members from our partner organisations share what excites them about the project. The series has been promoted via our website and social media channels.

Figure 9: TRANSLATE video series published on YouTube

4.5 Materials & online resources

4.5.1 Pull-up banners

Three pull-up banners were created by the UCC Academy Creative Services team which were used at the General Assembly meeting in Cork, June 2022 (Figure 10). These banners will be reused at future conferences, workshops and events to promote the project.

Figure 10: Schematic of TRANSLATE pull-up banners

4.5.2 Diagrams

Two new diagrams were created by the UCC Academy Creative Services team to aid our communication of the project (Figures 11 & 12). Figure 11 is a better iteration of a previous diagram to explain the key steps in the project and the consortium partners involved, while Figure 12 is a new more detailed diagram including work package information.

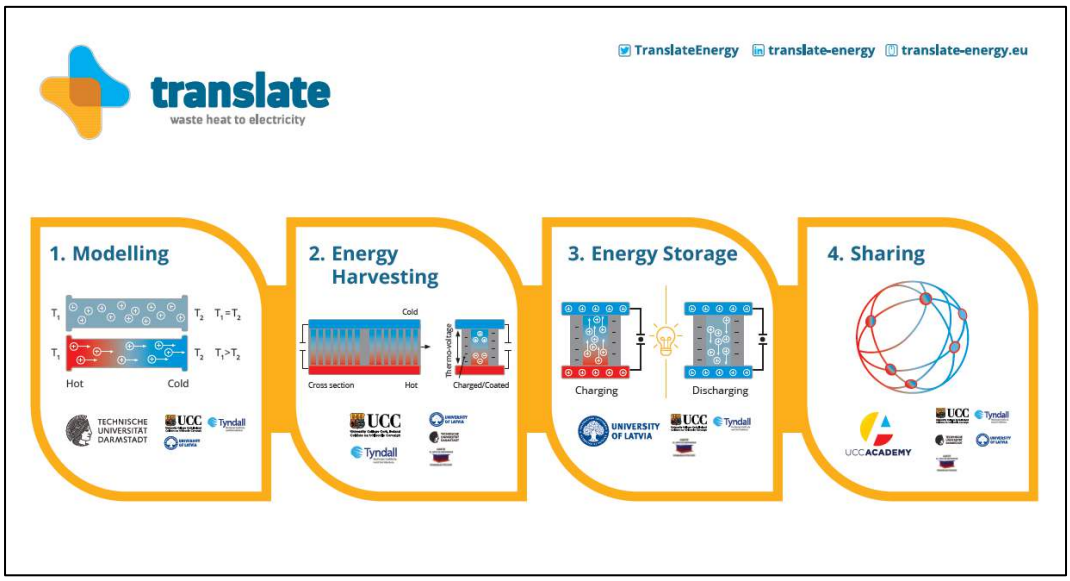

Figure 11 – Schematic diagram illustrating the project steps and consortium members involved

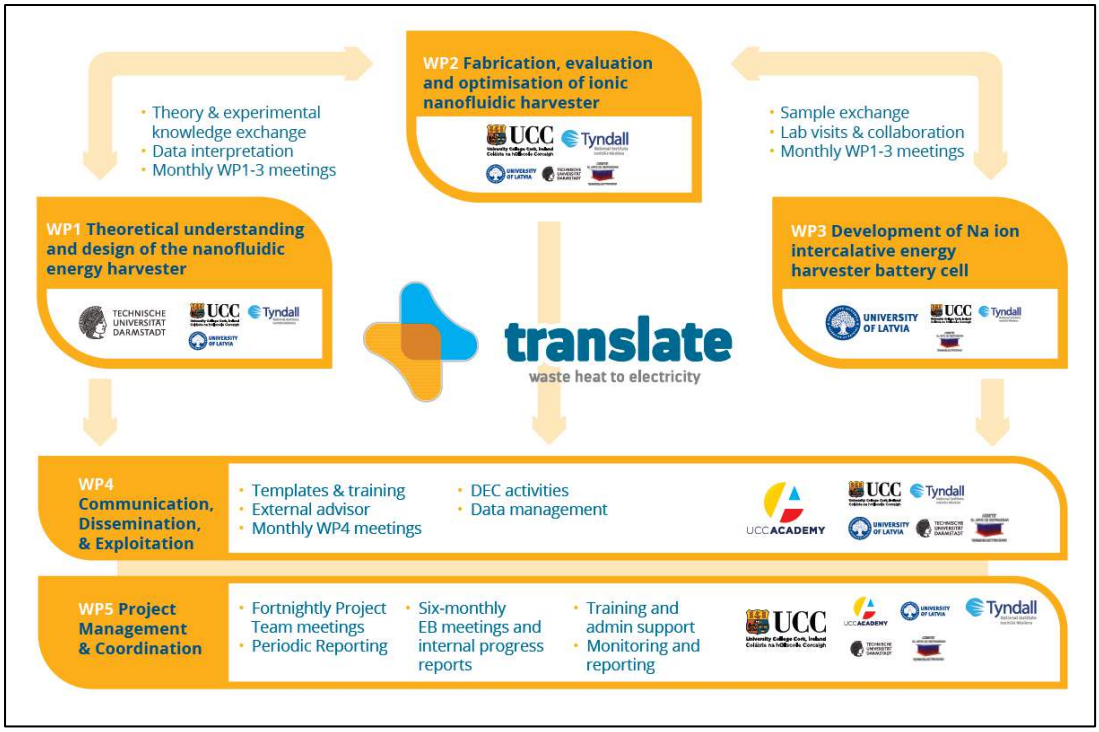

Figure 12 – Detailed schematic diagram illustrating the project steps and consortium members involved.

4.5.3 Brochures

An information brochure on the TRANSLATE project was created in April 2023 (Figure 13) which was printed in time for the Annual General Assembly meeting on 25-26 May 2023. Copies of the brochure were given to project partners for use at upcoming conferences, workshops and events. UCC Academy led on the design and creation of the brochures.

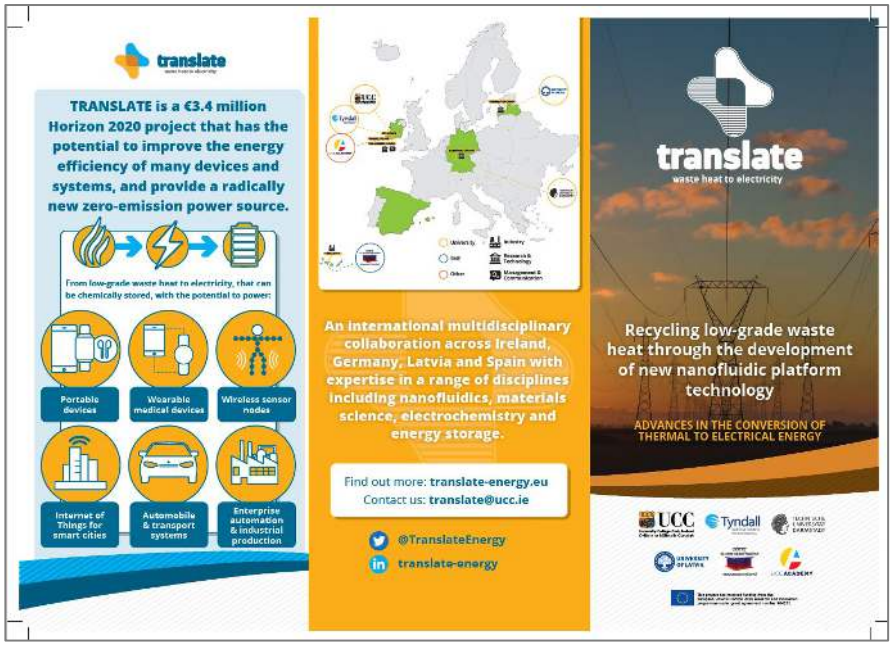

Figure 13 – Outside section of TRANSLATE brochure

4.6 Non-scientific publications

4.6.1 Newsletter

TRANSLATE published its first annual newsletter in June 2022 which includes an introduction piece on each of the partners and content from the first year of the project (Figure 14). The newsletter development and design was led by UCC Academy with input from the consortium.

Figure 14 – TRANSLATE 1st annual newsletter opening page

4.6.2 Blog posts

TRANSLATE has published 12 blog posts to date which feature on the News & Events section of the website. In February of this year, Dr Kafil Razeeb Mahmood (UCC) wrote a piece on Potential applications of the TRANSLATE device and in June of 2022, John Buckley (UCC Academy) summarised the highlights from the TRANSLATE General Assembly Meeting in Cork, Ireland

4.6.3 Press releases

TRANSLATE has published 3 press releases to date which feature on the News & Events section of the website. Following the TRANSLATE Annual General Assembly Meeting on 25-26 May 2023 in Riga, Latvia, the University of Latvia issued a press release on the event which was picked up by two local news outlets (as of 29th May 2023).

5. Dissemination activities in year 2

5.1 Events

5.1.1 Conferences

In the last year, TRANSLATE researchers presented at 7 conferences, details of which are outlined below:

- **Environ 2022 - 32nd Irish Environmental Researchers Colloquium (20th – 22nd June 2022)**
  TRANSLATE researcher Dr Ievgen Nedrygailov, University College Cork presented a poster at the Environ 2022 conference in Belfast, Northern Ireland entitled '[Converting waste heat into electricity using cellulose membranes]'.

- **NIBS Conference 2022 (4th – 6th July 2022)**
  TRANSLATE researcher Dr Gints Kučinskis, University of Latvia delivered a presentation entitled 'Preparation and characterization of electrodes for Na-ion batteries: Na2FeP2O7 and NA0.67MNO2' at the Functional Materials and Nanotechnologies (FM&NT) and Nanotechnology and Innovation in the Baltic Sea region (NIBS)) conference which took place in Riga, Latvia. TRANSLATE researcher Dr Valerii Malyshev, University of Latvia, also delivered a presentation entitled 'Infiltration control of highly ordered nanoporous aluminum oxide membranes with aqueous electrolytes' at the same conference.

- **European Materials Research Society Fall Meeting (19th – 22nd September 2022)**
  TRANSLATE researcher Dr Ievgen Nedrygailov, University College Cork attended the 2022 E-MRS Fall Meeting at the University of Technology in Warsaw, Poland with two

presentations entitled 'Ionic thermoelectric effect in nanofluidic membranes for efficient conversion of waste heat into electrical energy' and 'Functionalisation of nanochannels for the development of a sustainable and efficient low-grade waste heat harvester' (poster presentation).

- **American Physical Society (APS) 2022 (20th – 22nd November 2022)**
  TRANSLATE team members Professor Steffen Hardt and Dr Rajkumar Sarma, Technische Universität Darmstadt delivered a presentation entitled 'Thermoelectric energy conversion in nanochannels filled with ionic liquids' at the 75th Annual Meeting of the APS Division of Fluid Dynamics in Indiana, USA.

- **IEEE Apscon 2023 (23rd – 25th January 2023)**
  TRANSLATE team member Dr Kafil M. Razeeb was an invited speaker at the first IEEE Applied Sensing Conference (APSCON) in Bengaluru, India, which was the first major event of the 25th year of the constitution of the IEEE Sensors Council. Dr Kafil M. Razeeb and Amit Tanwar (PhD student) from Tyndall National Institute, University College Cork presented on the 'Development of Micro-Thermoelectric Generator as an Alternative Energy Source for Wearable Bio-Medical Devices'.

- **Environ 2023 (3rd – 5th April 2023)**
  TRANSLATE researcher Dr Ievgen Nedrygailov, University College Cork attended the 2023 ESAI Environ Conference (33rd Irish Environmental Researchers Colloquium) in Co. Donegal, Ireland and gave a presentation entitled 'Nanowood: Fully renewable,

biodegradable, environmentally friendly, natural material for the next generation thermoelectrics'.

Environ 2023

- **7th Green and Sustainable Chemistry Conference (22nd – 24th May 2023)**
  TRANSLATE researcher Anjali Ashokan (PhD student) presented a poster entitled 'Optimization of nanoporous membranes for ionic thermoelectric energy harvester' at the 7th Green and Sustainable Chemistry Conference in Dresden, Germany.

5.1.2 Other events

In the last year, TRANSLATE researchers participated in 5 other dissemination events including workshops and symposiums, details of which are outlined below:

- **Nanonet workshop at Helmholtz-Zentrum Dresden-Rossendorf (HZDR) (4th – 6th October 2022)**
  The Annual Workshop of the International Helmholtz Research School (IHRS) for Nanolectronic Networks (NanoNet) and the Departments of Nanoelectronics and of Semiconductor Materials of HZDR took place at the Jugendherberge Görlitz in Dresden, Germany on October 4-6, 2022. Dr Subhajit Biswas from TRANSLATE delivered a talk entitled 'Converting waste heat into electrical energy in ionic nanofluidic membranes'.

- **UCC Environmental Research Institute Postgraduate Research Symposium (25th November 2022)**
  TRANSLATE team members and PhD students Rupa Ranjani Palanisamy and Anjali Ashokan, University College Cork presented short 3-minute flash presentations on their research in TRANSLATE at the UCC Environmental Research Institute Postgraduate Research Symposium in Cork, Ireland.

- **NordPlus Junior 'Learning Renewables and STEM' (29th March 2023)**

The Institute of Chemical Physics of the University of Latvia (UL ICP), within the framework of the Nordplus Junior project, hosted 21 students and teachers from Vincas Kudirka Progymnasium (Kaunas, Lithuania) and Daugmale elementary school (Daugmale, Latvia). The meeting included mini-lectures on topics such as the application of nanotechnologies in energy saving and conversion, as well as workshops on thermoelectrics and the fabrication of anodic alumina membranes. The UL ICP team had an active and engaging discussion with the students about the importance of converting low-grade waste heat into usable electricity and main paradigms of the TRANSLATE platform.

- **Lecture at the Center for Enhanced Nanofluidic Transport at MIT (14th April 2023)**
  Prof Steffen Hardt from Technische Universität Darmstadt delivered a lecture on 'Transport through nanochannels driven by electric fields and temperature gradients' at the Center for Enhanced Nanofluidic Transport (CENT), MIT in Boston, USA.

- **STS Elionix Scientific Image Competition (28th April 2023)**
  TRANSLATE PhD student Rupa Ranajani, University College Cork won the STS Elionix Scientific Image Competition with two images based on nanostructured electrode materials which are thermally chargeable supercapacitors (TCSs).

5.2 Publications

The TRANSLATE project has published 1 scientific article in Year 2 with several others submitted and in the review phase. The scientific article from Amit Tanwar et al., Tyndall National Institute, University College Cork entitled 'A fully automated measurement system for the characterization of micro thermoelectric devices near room temperature' was published on 24th January 2023 in the open access journal Applied Thermal Engineering.

6. Exploitation activities in year 2

6.1 EIC Portfolio

The TRANSLATE project is part of the EIC 'Energy harvesting, conversion & recovery' portfolio. On 26th April 2023, TRANSLATE PI Professor Justin Holmes and Project Manager Rebecca Buckley met with EIC Programme Manager Antonio Marco Pantaleo to discuss synergies with other projects in the portfolio and are awaiting updates following the discussion.

6.2 Pitch event at Analog Devices

TRANSLATE PI Justin Holmes and Project Manager Rebecca Buckley were invited by Dr Colm Glynn, Senior Process Sustaining Engineer at Analog Devices and External Advisor of TRANSLATE, to provide a pitch and overview of the project to various business units at Analog Devices in Limerick, Ireland. The visit included a tour of Analog FAB facilities (Figure 15), showcasing their advanced manufacturing capabilities. Discussions also revolved around potential future collaborations and opportunities for researcher placements, highlighting the strong synergies between TRANSLATE and Analog Devices.

Figure 15 - Justin Holmes and Rebecca Buckley receiving a tour of Analog Devices' FAB facilities located in Limerick, Ireland

6.3 Published on European Commission's Innovation Radar platform

The technology being developed in the TRANSLATE project was analysed by the European Commission's Innovation Radar and subsequently published on the Innovation Radar platform under the title 'Improved energy harvester with capacitor capabilities based on advanced nano-structures, whilst utilising Earth-abundant materials'. This presents the projects with a number of opportunities including visibility to potential investors and access to "go to market" training and supports which the project is currently exploring.