The Dublin Institute of Technology (DIT) is relocating to a new campus at Grangegorman in Dublin city centre. It will incorporate a major dedicated research facility that provides accommodation for 100 PhD students and 20 researchers. The Environmental Sustainability and Health Institute (ESHI) is central to the research and innovation hub in DIT Grangegorman. It is co-located with DIT Hothouse, a commercialisation and incubation centre, in the first new building on campus, the Greenway Hub. ESHI occupies state-of-the-art facilities that include 10 laboratories (e.g. microbiology, cell culture, assistive technology, food science, water analysis, vision sciences research, energy research), shared working spaces, a number of meeting rooms, conference and seminar space. It provides accommodation for 100 PhD students and 20 researchers and support staff.

Further information:

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Figure 1: Sphere of Environmental Health and Opportunity for Intervention

The Environmental Sustainability & Health Institute (ESHI) is a dedicated national translational research platform, uniquely based on collaboration between the Dublin Institute of Technology (DIT), the Health Service Executive (HSE) and Dublin City Council (DCC), building national and regional capacity and capability.

ESHI is an all-island initiative, involving strategic partnerships with the University of Ulster (UU), Dublin City University (DCU), the Institute of Public Health (IPH) and other stakeholders. It is uniquely positioned to facilitate an interdisciplinary and cross-sectoral approach, integrating academic research with the knowledge and expertise of relevant professionals to generate collective responses to public health issues. Building upon existing education and research expertise, in addition to collaborations and strategic partnerships with multi-sector stakeholders, researchers at ESHI develop evidence-based interventions addressing environmental health problems (see Figure 1).

This is achieved by:

1. Provide practical solutions to environmental health problems,
2. Inform environmental health policy, planning and decision making
3. Impact on the health of vulnerable populations and facilitate investments to reduce the burden of chronic disease and injuries

This is achieved by:

1. Building a new dedicated research facility at Grangegorman, enabling interdisciplinary collaboration by concentrating, consolidating and co-locating scientists, technologists and environmental health professionals,
2. Undertaking a strategic research program, informed by all stakeholders to provide solutions-focused interventions involving research, technology development, knowledge transfer, outreach
3. Building on existing partnerships and collaborations, in addition to forging new relationships both nationally and internationally to expand the expertise base
4. Developing innovative, inclusive teaching and learning activities.

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4. Developing innovative, inclusive teaching and learning activities.
The ESHI Model
Central to ESHI’s mission is an interdisciplinary and cross-sectoral approach, focused on generating collective responses to public health threats. This is achieved through collaboration between teams of Environmental Health Academics and Practitioners (EHAPs) which leverage the collective expertise of relevant academics, health practitioners and policy makers to determine and manage the solution-focused research agenda to yield superior outcomes and benefits (e.g. economic; policy; new information/data; new technology).

ESHI is a novel, progressive approach to bridging the science-innovation-policy gap (see Figure 2), reviewed and validated by an international panel of experts via the PRRTI-Cycle 5 funding protocol.

Collaborative Research at ESHI
ESHI is responding to environmental health research needs despite current resource constraints and prevailing economic circumstances. The research programme builds on respective and complementary expertise of Environmental Health Academics and Practitioners (EHAPs) and consolidates activities in a truly interdisciplinary Institute aligned to the central objectives of DIT’s research strategy (Figure 3).

ESHI’s research corresponds to many of the priority areas for future investment in public research as identified in the report by the Irish Government’s Research Prioritisation Steering Group (Forfás, 2012). Such collaborative and interdisciplinary research shall contribute to improvements in quality of life, impact on policies and potentially lead to enterprise development.

The interdisciplinary teams pursue specific areas of research focus (SARFs) to provide the evidence base and develop interventions consistent with the specific objectives of Ireland’s National Environmental Health Action Plan (NEHAP).

Specific Areas of Research Focus (SARFs) include:
- Bio-monitoring
- Energy
- Food
- Policy & Lifestyle (including Air Quality & Climate Change)
- Water

Policy & Lifestyle
This SARF addresses social and psycho-social factors that influence a population’s well-being, which in turn contributes, significantly, to the state of any economy. This is a truly integrated and interdisciplinary SARF (e.g. air quality, climate change, quality of life issues, etc.) because it addresses the impacts of key environmental issues that impact population well being and public health policies.

Air Quality & Climate Change:
Ireland is required under EU legislation to monitor air quality in larger urban areas to ensure that the health of the population is not put at risk. The air quality and climate change unit in ESHI has expertise on a wide range of air pollution intervention studies, and on exposures to environmental tobacco smoke. It has a well-established track record in research, key publications, and research funding from Irish, EU and US funding agencies. It is a truly inter-disciplinary and cross-sectoral team that includes collaborations with regional (e.g. DCC, DCU), National (e.g. HSE, IPH) and international partners (e.g. Harvard university, Umea University, WHO Europe, EU JRC Ispra).

Water
The National Environmental Health Action Plan (NEHAP) identifies the need to ensure clean, safe, adequate drinking water supplies and to promote sustainable management of all waters, while enhancing quality of life. This SARF seeks to reduce the influence of poor water quality on public health by identifying specific areas of threat, develop technologies for detecting, assessing and minimizing the levels of biological and chemical pollutants in drinking water supplies and develop novel water monitoring, hygiene and water treatment systems.

Mathematical & Computational Methods
Mathematical modeling and simulation are fast becoming an essential component of any scientific project. Statistics will be used to underpin the scientific validity of research with cutting-edge, robust statistical methodologies. The CCRA will leverage the consortium’s expertise in health informatics, mathematical modeling and statistics.

Environmental health informatics is an interdisciplinary field which deals with the storage, retrieval, organization, analysis and optimal use of environmental health information, data and scientific knowledge for problem solving and decision making. Such enabling technology supports many aspects of population health (e.g. the National Cancer Registry needs to be coordinated with other data sources).

Teaching & Learning
ESHI’s focused research programme enhances teaching and learning through undergraduate, postgraduate, continuing professional development (CPD) and outreach activities. Hence it links education and up-skilling provision directly to practitioner requirements responding to regulatory changes using evidence based best practices.

www.dit.ie/eshi