



## **School of Computing, Engineering, and the Built Environment Edinburgh Napier University**

### **PHD STUDENT PROJECT**

#### **Funding and application details**

**Funding status:** Self funded students only

**Application instructions:**

Detailed instructions are available at <https://blogs.napier.ac.uk/scebe-research/available-phd-student-projects/>

*Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.*

#### **Project details**

**Supervisory Team:**

- DIRECTOR OF STUDY: Dr Cletus Moobela (Email: [C.Moobela@napier.ac.uk](mailto:C.Moobela@napier.ac.uk))
- 2<sup>ND</sup> SUPERVISOR: Prof. Mark Deakin

**Subject Group:** Built environment

**Research Areas:** Built Environment, Urban Planning, Climate Science

**Project Title:** Intervention without violation of natural order: A complex adaptive systems (CAS) perspective of sustainable urban development

**Project description:**

The rise to prominence of the concept and practice of sustainable development over the past few decades has paralleled an increasing number of theoretical platforms upon which to understand the concept. These theories, which manifest themselves through a number of definitions that have been conceived, emanate from the increasing recognition of the multi-dimensionality of the concept, straddling a wide spectrum of disciplines. However, despite the existence of this burgeoning amount of interest and effort, there are still more questions than answers in the understanding of sustainability in general and sustainable urban development in particular. As a result, sustainability remains a relatively nebulous

concept, precariously balanced on the triple stilts of the environmental, economic and social dimensions. This study will explore the potential of complex adaptive systems theory as a new window through which to view the concept and practice of sustainability, with particular reference to urban development. The study is expected to perceive development as an interventionist activity into the social, economic, and environmental existence. The key argument to be championed is that even prior to central intervention in the form of development activities (programmes, policies, plans, etc), there is usually a highly resilient prior (social, economic, and physical) reality associated with the recipient environment and that sustainable intervention is a function of how well decisions conform to the existing natural tendencies. Thus, if policymakers and practitioners are to behave intelligibly in the quest for sustainable urban development, they must be prepared to embrace the notion of intervention without violation of natural order as a central element of their design philosophy. Previous efforts have been made, such as those contained in the principles of 'The Natural Step', but these do not go far in terms of theoretical scaffolding for sustainable development.

Research proposals are invited that will involve creating a complex adaptive systems protocol for comprehending sustainable development, with possible use of simulation tools and case studies from both the man-made and natural systems.

#### **References:**

## **Candidate characteristics**

#### **Education:**

A first-class honours degree, or a distinction at master level, or equivalent achievements in a built environment related subject, including geography, urban planning, real estate, urban studies, sustainable development, among others.

#### **Subject knowledge:**

- Sustainability in the built environment

#### **Essential attributes:**

- Ability to conduct independent research.
- Good analytical skills.
- Good problem-solving skills.
- Knowledge of research methods and tools.
- Good written and oral communication skills.

#### **Desirable attributes:**

- Knowledge of complexity theory