

(Re)Connect the Nexus: Young Brazilians' Experiences of and Learning about the Food-Water-Energy Nexus

Key findings, 2019

INTRODUCTION

Between 2016-2018, an interdisciplinary team of researchers from Brazil and the United Kingdom led a major research project (funded by ESRC-FAPESP) investigating how young people in Brazil (aged 10-24) experience and learn about vital resources. In one of the largest pieces of youth research ever undertaken (involving over 3,700 young people), a suite of methods was used to listen to diverse young people's voices, including a large survey and the use of innovative 'nexus mapping' techniques.

The themes of food, water and energy are of strategic relevance to development goals in Brazil. Rather than see these sectors as separate silos, it is important to look at their mutually-reinforcing characteristics – to see them as part of an interconnected *nexus* of resources, opportunities and threats. For instance, in Brazil, the water-energy nexus is of major importance given the challenges which are faced in terms of water scarcity. The challenges which face the nexus in the Brazilian context are compounded by social inequalities that particularly face children and young people. In a country where over 4 million young people live in poverty, with younger children twice as likely than adults to be living in extreme poverty, it is vital to more fully understand nexus threats. As both a cause and a consequence, vast disparities exist in young people's access to effective sanitation, nourishment, water and electricity. A research focus on young people, education and the nexus was (and is) crucial to ensure human welfare and development in the future. In this context, the main aim of (Re)Connect the Nexus was to examine young people's understandings and experiences of, and participation in, the food-water-energy nexus. Although there is plenty of emerging research about the food-water-energy nexus, this is usually 'top-down': it looks at global or national policies; or, it analyses flows of food, water or energy into, through or out of cities at a large scale.

In Brazil, 'the nexus' is neither much spoken about, and nor is the connection among the three elements'
(Energy Company Sustainability Manager)

INTRODUCTION

What has been missing from the picture is a detailed view of how 'ordinary' citizens interact with the nexus, and especially those groups who are usually marginalised from research and policy-making – like young people. Moreover, in the context of climate strikes and youth social action around the environment in many places around the world, this project was particularly timely.

Where do citizens living in different contexts source food, water or energy, and what do they know about where those resources come from? How do food, water or energy interact in their everyday practices – like shopping, cooking, cleaning, learning or playing? What are the 'trade-offs' that they make between different 'sectors' – and do they see resources like this? What are the major risks they perceive? And, where and how do they learn about the nexus?



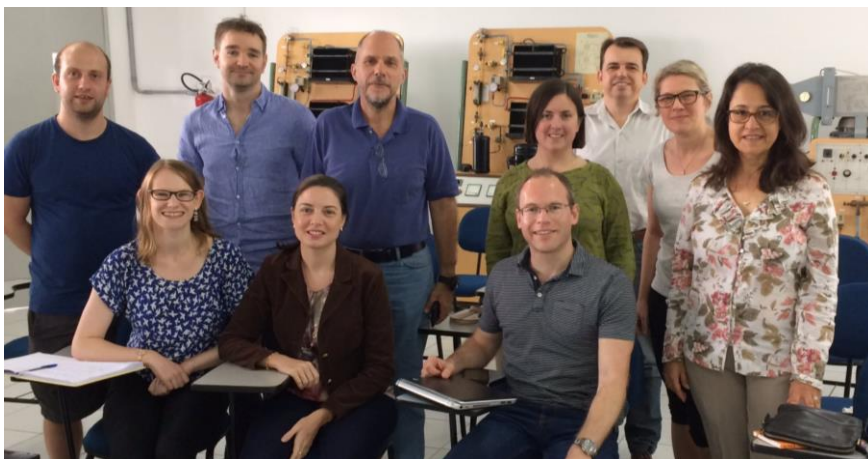
Recruiting participants for the research

*[Sao Paulo city's]
capacity to support
itself reached its limit at
least 30, 40 years ago
... energy comes from
thousands of kilometres
away, water comes
from 100, 150km away'
(Environmental NGO
professional]*

THE (RE)CONNECT THE NEXUS PROJECT

(Re)Connect the Nexus represented a major collaboration between academics in Brazil and the UK. The Brazilian team, which included engineering and education specialists, was based at UNESP (Universidade Estadual Paulista). The UK team, which included social scientists (human geographers specialising in youth research) was based at the Universities of Birmingham, Northampton and Leicester.

In order to provide a focus for the research, and to examine a cross-section of issues, the case study region was the Metropolitan Region of Paraíba do Sul River Basin and São Paulo State North Shore (MRPSRBSSNS), in São Paulo State (Figure 1). According to Government statistics, it holds the following, important characteristics: i) a population of 2.3 million (5.5% of São Paulo State population); ii) a strategic location between the two most important metropolitan areas of Brazil (São Paulo and Rio de Janeiro); iii) economically significant (82.7% of State GDP; 27.7% of Brazilian GDP); and iv) socially diverse (from urbanised cities with richer and poorer populations, to traditional rural communities in the coastal area).



Members of the RCTN team

METHODOLOGIES

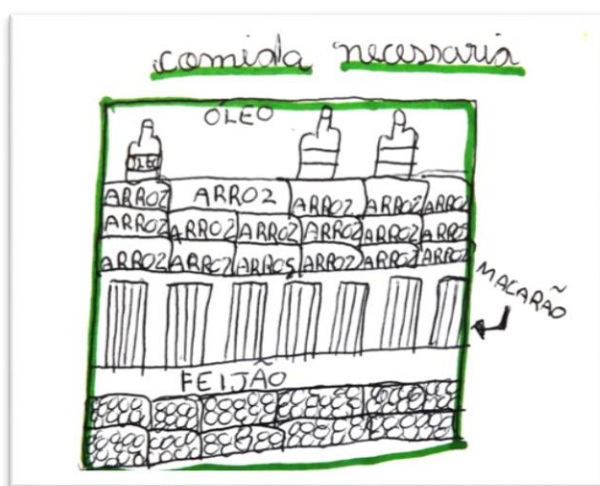
The researchers used several methods in order to understand the viewpoints of different professionals, at different geographical scales, as follows:

A survey with 3,705 young people. The survey provides a large-scale, 'baseline' view of young people's experiences of and learning about food, water and energy. The survey included a range of detailed closed and open questions about different facets of the food-water-energy nexus, ending with a series of questions about interactions between parts of the nexus. In its sample size and level of detail, it represents one of the largest surveys undertaken with young people, anywhere in the world. The team ensured a statistically-significant sample that was stratified by gender, geographical location and socio-economic class. The survey was administered online (via Sphinx software), with a paper-based alternative for participants without internet access.



Young participants completing the survey

A programme of in-depth qualitative research with 48 young people. This component of the project gave the team a much more detailed understanding of how young people gain knowledge about, and participate in, the food-water-energy nexus. Again stratified to represent different societal and geographical contexts, young people took part in a series of activities: a scene-setting semi-structured interview called 'my life with WEF'; a smartphone 'app-based' activity, where young people could take photos and answer short surveys about food, water, energy in their everyday lives; and a follow-up interview ('visual web exercise and mapping'), where participants used maps and images generated from the app to create visual representations of 'their' nexus. Overall, 76 interviews took place (many young people took part in more than one interview), lasting between one and three hours.



The 'necessary food' (Male, aged 11)

METHODOLOGIES

Detailed semi-structured interviews with 63 key professionals. The interviews were designed to offer a variety of perspectives – sometimes at a larger State or Federal level – to complement the findings from our research with young people. We worked with professionals from a range of sectors – within, across and beyond ‘food’, ‘water’ and ‘energy’, including representatives of: ministries of education, environment and rural development; Civil defence; Environmental and consumer rights NGOs; Family and small-scale commercial farming; Industries, including sugar and ethanol manufacturing, cosmetics manufacturing, pharmaceuticals; Energy and water distribution companies; Formal and informal education (including educators and advisors for state and municipal level government).

METHODOLOGIES

A global video competition to encourage cross-cultural dialogue / learning about the nexus. Through a dedicated *Facebook* campaign, young people were asked to respond to the statement '*food, water and energy in my everyday life.*' We invited children and young people from around the world to submit a short video on their relationships with and understanding of the diverse ways in which food, water and energy is produced, consumed and experienced. 10 videos were submitted from countries including Brazil, the UK and Singapore. Videos can be accessed from the following YouTube link:

https://www.youtube.com/channel/UC_D2l8t-U8bEPXlvDkvapZQ



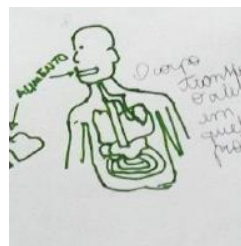
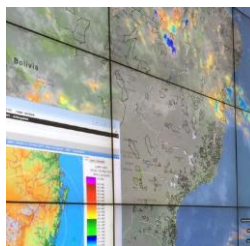
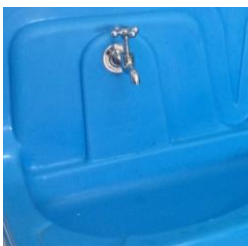
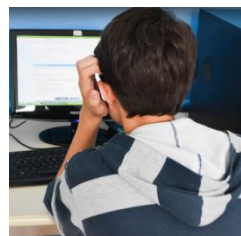
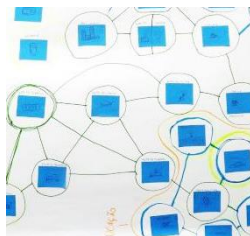
A screenshot from one of the video entries

KEY FINDINGS

Here we present a series of key findings from our research, with five core themes. All findings shown as percentages relate to the survey with young people.

- Involvement in the nexus
- Prioritising nexus interactions
- Politics and social justice
- Environmental educations and 'disconnection' from nature
- Governing the nexus – who takes responsibility?

Summaries of these themes are presented below. For more detailed insight into any of these themes or data please get in touch with the project team.



'energy is something we need to live, your life, your body needs energy, in the things we do, to survive' (Male, 18)

KEY FINDINGS

Involvement in the nexus

Our data show that young people are involved in a diverse range of activities associated with food, water and / or energy on an everyday basis. Their participation in such activities varied dramatically according to social and economic variables.

- Two-thirds or more ate with their family, helped prepare **food** or clean/wash up, or used a digital device such as smartphone or tablet whilst eating, whereas fewer than 5% caught or sold food. Older young people were generally more involved in domestic chores, with rural males being more responsible than their other contemporaries for sourcing or selling food. Many young people – especially older, wealthier students – talked about not having enough time to eat, having to snack on the go or miss meals altogether.
- Predominant interactions with **water** were domestic – for cooking, cleaning or washing, with over two-thirds engaged in such activities. A significant minority (a third) used water for agricultural purposes (both animals and crops). A small but significant proportion (between 5% and 15%) managed water beyond the home – for instance in mitigating flooding or for transport. Generally, young people from rural backgrounds were more engaged than urban youth in using and managing water – whether at home or beyond. A key issue for many young people was the source of their drinking water: many agreed that bottled water was expensive and wasteful and preferred water from filter (*filtro*), although rural youth thought that springwater tasted better. Water was a central preoccupation for many professionals, with many arguing that it was key to the nexus – particularly in the wake of the 2014 São Paulo water crisis:

'I don't like much the water of the city, I prefer it from the farm (...) the water of the city tastes like chlorine (...) because in the city they have to add chlorine to clean the water, while in the farm there is no need' (Female, aged 19)

KEY FINDINGS

Involvement in the nexus

'Water is life, water is everything [...] We lived through a water crisis recently and it affected industry, it affected citizens, people were scared, we had to have water vans going around the city, the reservoirs were dry, it wasn't raining [...] without water we lose everything.'

[Environmental NGO Professionals, São Paulo]

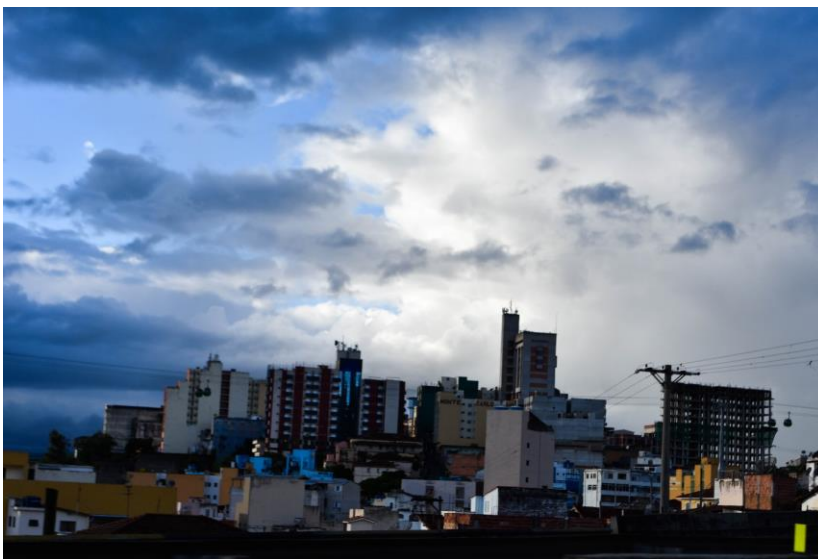
- In contrast with water, the most common **energy** activity was mitigation, with nearly as many young people dealing with power shortages as charging their mobile phones (48%). Around a half tried to save energy at home whilst a small but significant minority (one in ten) chopped or sourced firewood. Females were more likely to try to save energy at home, whereas rural males were more commonly engaged in sourcing firewood. Many young people struggled to talk about energy as it is less tangible than food or water; thus, other than saving energy, a common concern was with bodily energy levels – related not only to food but work, school, transport and money.

KEY FINDINGS

Prioritising nexus interactions

A number of key professionals expressed the view that Brazilian society was becoming more individualised – which in turn impacted negatively upon the population's capacity to think along nexus lines in terms of resource use and management. Our research with young people complicates and to some extent contradicts their perceptions in two ways. Firstly, when presented with a range of scenarios in the survey, young people were able to clearly prioritise certain aspects of the nexus over others, as follows:

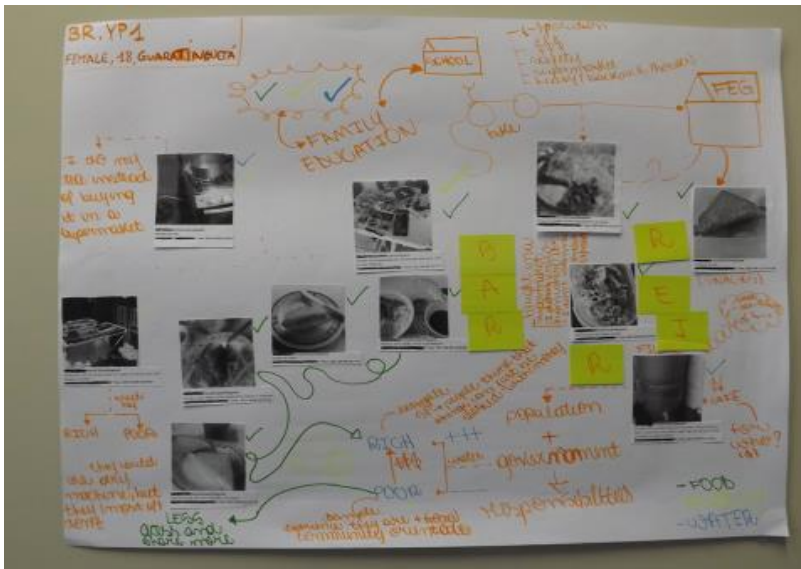
- In line with key professionals, young people (especially younger young people) felt that it was more important to save water than energy.
- A much higher proportion of young people (30%) would prefer that corn went into food than energy production (19%).
- Young people were more likely to worry about the cost than the source (and therefore any associated energy costs) of their food.
- Older young people (18+) were less likely to worry about how much energy they were using when preparing food.



KEY FINDINGS

Prioritising nexus interactions

Secondly, many young people undermined the presumed dominance of food, water and energy in 'the nexus'. By looking at their individual interactions with the nexus, a range of other concerns came into view: modes of transportation, money, education, family and friends, safety, and far more besides (Figure 1). In fact, in contrast with key professionals' perceptions, our interviews with young people demonstrated a very sophisticated understanding of nexus interactions.



Visual web, Female, aged 18

A 'visual web' created by Adriana, an 18-year-old student from Guaratinguetá. The web is indicative of the complex ways that individual young people thought about the nexus. It also shows how they added in elements beyond food, water and energy – such as school, transport (bicycle) and money.

'Sometimes he would pass three days without eating anything, only with the food of the school'
(Male, 15)

KEY FINDINGS

Politics and social justice

Young people expressed strongly politicised views about food-water-energy, especially in terms of social justice, equity and care for poorer groups. Their concerns were fairly even across food, water and energy, although food and water were, once again, key issues.

- Alongside several young people telling us about other young people whom they knew to be in precarious situations surrounding the security of their food, 31% noted that young people in their community worry about food, with around 15% exhibiting concern that many do not have enough food. In the interviews, young people living in disadvantaged social contexts told us that they struggled to access food on a regular basis (Figure 2).
- At least a third of young people thought that young people in their communities worried about water (42%), did not have enough water (32%), or used too much water (66%).
- Slightly fewer young people were concerned with energy, although 29% noted that young people in their community worry about energy, with 20% not having enough and 57% using too much.

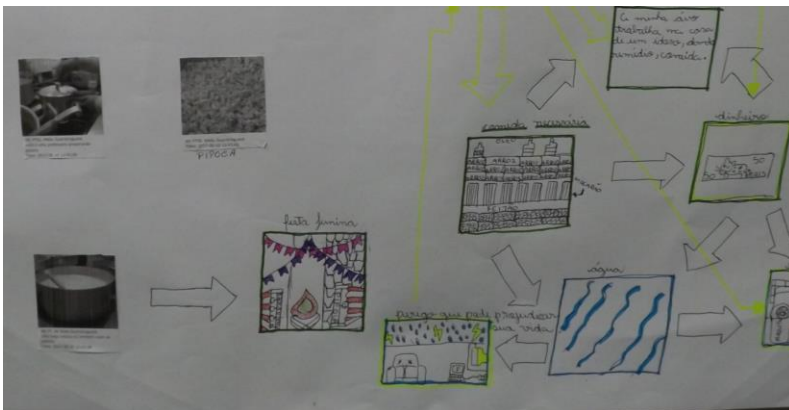
In the qualitative research, young people indicated how their everyday experiences of food-water-energy are connected to the **current political and economic situation in Brazil**. They argued that corruption was a root cause of the inequalities and injustices they highlighted – as did some key professionals:

KEY FINDINGS

Politics and social justice

"Individualisation is sustained by a culture of corruption. This idea that you get what you can for yourself and don't worry about the rest of society[...] there's no connection made between people's problems. So it becomes very difficult for young people to understand this nexus between food, water and energy, and how these three things can be connected in a sustainable way"
[Water basin committee secretary, Paraíba Valley]

For many young people and key professionals, social media were a double-bind: both a source of information and solidarity (in the face of corruption) that had not previously existed, and a source of stress, unrealistic expectations and inaccurate information. Both key professionals and young people stressed the importance of education to 'raise consciousness' – within communities, and nationally.



Visual web, Male, aged 11

An extract from a 'visual web' created by José, an eleven year-old boy from Guaratinguetá. He told us that his family regularly struggled to secure food, and that as a result other families in their community supported them.

KEY FINDINGS

Environmental education and 'disconnection' from nature

We identified competing claims about **young people's learning and awareness about nexus issues** between different professional groups. In contrast to the above findings, there was, for instance, a disconnect between young people's experiences and key professionals' views that the Brazilian public (and especially youth) are unaware of the material interactions and governance networks that generate resources. Indeed, many key professionals felt that young people should not only learn more about the sources of their food, water and energy but be offered opportunities to visit farms, water treatment plants and other key nexus sites in order to experience management and governance issues first-hand. For instance:

"We have a project where we are helping to set up nurseries [of trees] in schools and so the young people can see the plants growing, but [...] you know, the trees don't grow overnight, so by taking these objects into the school space we can draw out connections and that this generates a sense of empathy amongst the young people – what ways, by consuming natural resources, do I contribute to there being less green spaces, [...], how would I survive?"
[Environmental educator, São Paulo].

However, our work paints a more nuanced picture – although a clear and consistent gap in young people's self-reported knowledge exists around who is responsible for managing resources, and how those resources are accounted for and managed. Generally, young people reported the lowest self-reported knowledge about energy when compared with food and water.

KEY FINDINGS

Environmental education and 'disconnection' from nature

- Between a third and a half of those surveyed wanted to know more about food, water and energy issues in their community – but this means that between two-thirds and a half feel they know enough.
- Levels of understanding about food and energy were higher in rural places; conversely, levels of understanding about water were higher in urban places.
- When it comes to **food**, young people feel they know least about which politicians and organisations are responsible for food supply, where their food comes from, and the impacts of climate change on food production (45% or more). They feel they know far more about how food is prepared and whether or not it is healthy (two-thirds or more). Generally, older young people, and females, felt they had better levels of knowledge about food. Self-reported understanding was fairly uniformly higher amongst urban respondents.
- In terms of **water**, young people identified that the biggest gaps in their knowledge were around where their water comes from, how much they consume, and, again, who is responsible for water management. They felt they knew far more about how to deal with water shortages, the problems associated with pollution, and the use of water in food production. Generally, with some exceptions, levels of understanding were higher amongst younger young people, with the picture mixed in terms of gender. Young people in urban areas felt they knew more about pollution, dealing with floods, and the organisations involved in managing water resources.

KEY FINDINGS

Environmental education and 'disconnection' from nature

- Again, for **energy**, young people felt they knew least about which people or organisations were responsible for energy security, alongside the processes and risks associated with energy production (approximately half in each case). They felt they knew slightly more about saving energy in the home and the problems associated with power shortages/cuts. Levels of understanding were uniformly higher amongst older young people, and for males
- Children and young people were fairly ambivalent about contemporary education on the environment and resources: although 29% agreed that information was generally available and clear, 23% disagreed and over 48% neither agreed nor disagreed.

Our findings counter Western assumptions that young people should be 're-connected' with nature through, for instance, trips to natural places. Rather, notions of 'connection' to nature were conceived differently by young people – especially through young people's complex, everyday engagements with food and their politicised views about the nexus, which have been outlined in other sections of this report.



KEY FINDINGS

Governing the nexus: who takes responsibility?

Key professionals told us that food, water and energy interact at multiple scales in the production, distribution, consumption and reuse/disposal of resources. This results in complex networks of governance bringing together state (federal, state, municipal) and non-state actors (e.g. water basin committees).

- The complexity of nexus networks was particularly evident in the delivery of Environmental Education (EE) in Brazil, which is complicated and polycentric. This means that young people receive varying content and forms of learning about nexus issues and the environment more broadly – a key explanation for the patchiness of young people's actual and perceived levels of knowledge.
- **Key professionals' views about young people were complex and contradictory.** Some positioned young people as disengaged, individualistic and focused on consumer goods; others offered the view that young people could be critical and, as a result of their historical positioning, in a unique place to help address current environmental (and social) crises. However, in both cases, young people were often thought to be responsible, to some extent, for their knowledge and action around the nexus.

KEY FINDINGS

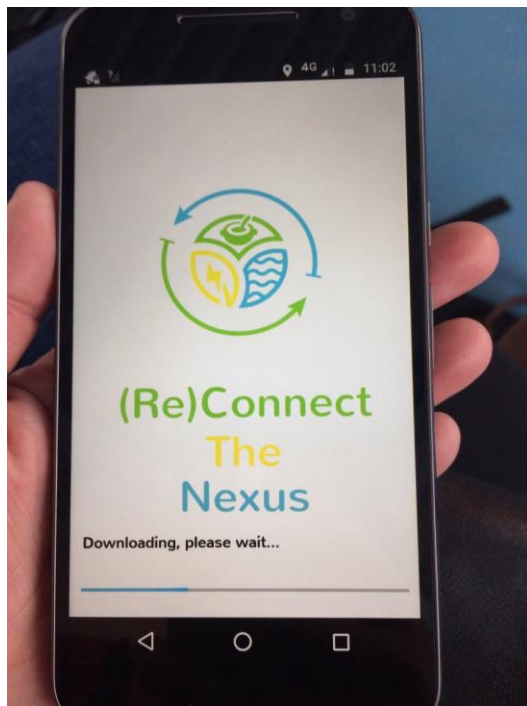
Governing the nexus: who takes responsibility?

- Key professionals talked in detail about potential changes to resource governance – including providing successful examples of integrated resource management at the water basin scale, and the possibility of fiscal and other incentives for addressing nexus threats.
- Although 21% of young people recognised that households should take responsibility for their consumption and environmental practices, 43% indicated that, by contrast, it should be the role of the local or State government to do so (especially older young people from urban places). This finding was backed up in interviews, where young people talked in detail about how municipal governments (in particular) should address resource inequalities.

KEY FINDINGS

A nexus methodology

The nexus methodology – and especially the qualitative research – enabled the co-construction of knowledge and learning to an unprecedented degree, with both young people and key professionals. Both groups told us that they learned enormously from the process of taking part in the research. Through the detailed survey, tailored interview schedules, a bespoke app and a novel ‘nexus visualisation’ activity, our approach teased out complex processes/connections that previous research has failed to elucidate, including the interconnections between multiple spatial and temporal scales, forms of mobility and infrastructures, and the social-political contexts of resource inequalities. We are working to deliver versions of the nexus approach in education settings, including schools and farms that deliver community-based learning, and are keen to work with other organisations to develop this approach.



Mobile app, a key component
of our nexus methodology

FURTHER INFORMATION

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The other team members working on the *(Re)Connect the Nexus* project are also happy to discuss the research. They were:

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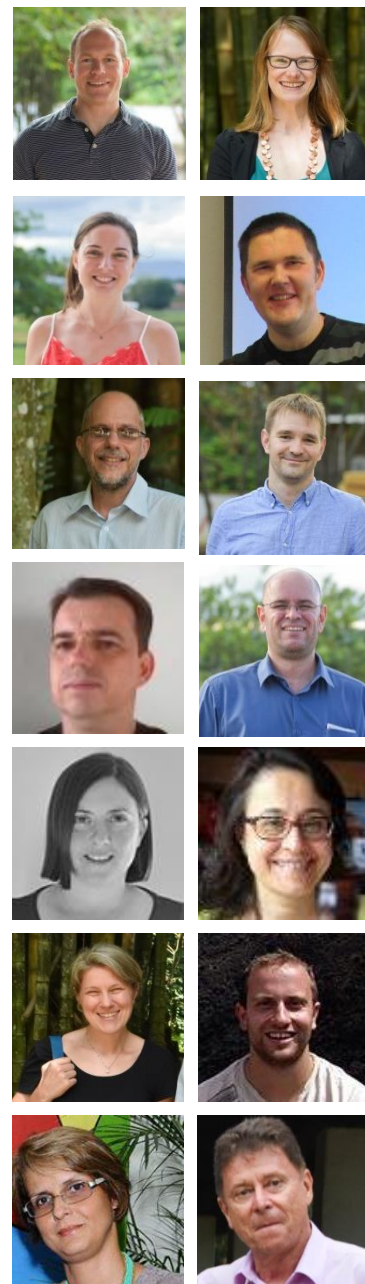
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