



## Healthy Urban Living and the Social Science of the Food-Water-Energy Nexus: UK-Brazil Calls for Collaborative Research Call specification

Closing Date: 16.00BST/12.00 Midday Brasilia Time, 2 July 2015

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## Summary

Proposals are invited for collaborative projects between the UK and Brazil which contribute to the economic development and welfare of Brazil within the areas of **Healthy Urban Living** and the **Social Science of the Food-Water-Energy Nexus**. Please note there are two calls available: Proposals should be submitted to the 'Urban transformations in Brazil (Newton)' Je-S call (see annex 1) or the 'Nexus in Brazil (Newton)' Je-S call (see annex 2).

The total UK and Brazilian funds available for both calls is up to £7.5 million.

Applicants do not need to request equal amounts from both sides, but the amounts should reflect the difference in covered costs and local prices. The agencies also expect the costs on each side to accurately reflect the research effort to be carried out. What is expected is that the research effort for both UK and Brazil is comparable and the projects demonstrate a true joint partnership.

Both calls will form part of the Newton Fund commitment to develop bilateral research partnerships and enhance the global research community through developing knowledge. The calls are supported by the Economic and Social Research Council (ESRC), the Brazilian State Funding Agencies: FACEPE; FAPEAL; FAPES; FAPEPI; FAPITEC; FUNDECT; FAPESP; FAPEAM; FAPEG; FAPEMIG; FAPDF; FAPERGS; FUNDAÇÃO ARAUCÁRIA; FAPEMA; FAPERJ; FAPESC, co-ordinated by the National Council of State Funding Agencies (CONFAP) and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), with additional support from the Arts and Humanities Research Council (AHRC) and the Medical Research Council (MRC) under the Healthy Urban Living call, and the Science and Technology Facilities Council (STFC) under the Social Science of the Food-Water-Energy Nexus call.

## Scope

In order to refine the scope of these calls and prioritize limited funding on the most pressing issues, the participating funders organised a workshop with academics representing institutions from across the UK and Brazil in April 2015. Participants took part in a range of activities and discussions in order to establish key issues which would benefit from UK/Brazil collaborative research under the Newton Fund.

In addition to the usual academic requirements of excellence with impact, a successful proposal must:

- Be a joint activity involving research groups from both the UK and Brazil
- Be able to meet the ODA requirements stipulated under the Newton Fund for the economic development and welfare of Brazil (<http://www.rcuk.ac.uk/international/newton/>)
- Offer contributions to the knowledge and understanding of either 'Healthy Urban Living' or 'The Social Science of the Food-Water-Energy Nexus' under one or more of the priority themes.

Proposals must show a true joint partnership between the UK and Brazilian researchers. The added benefit of the collaboration to each party should be clearly demonstrated in the proposal.

The proposals must demonstrate the ambition and novelty of the research, and demonstrate how research outputs and impact will be communicated to stakeholders in academia, industry, civil society and government, in both the UK and Brazil. To help researchers achieve the maximum impact from their work, the ESRC has developed an Impact Toolkit (<http://www.esrc.ac.uk/funding-and-guidance/impact-toolkit/index.aspx>).

A key goal for this funding opportunity is a two-way transfer of knowledge between partners which continues throughout the project, in order to build and strengthen relationships between participating nations.

The budgets available for the calls are:

- **Healthy Urban Living** - Up to £2.5 million (100 percent fEC) is available from the ESRC, MRC and AHRC to support UK researchers, with matched equivalent effort from the participating FAPs to support Brazilian researchers.
- **The Social Science of the Food-Water-Energy Nexus** - Up to £1.25 million (100 percent fEC) is available from the ESRC and STFC to support UK researchers, with matched equivalent effort from the participating FAPs to support Brazilian researchers.

Proposals are invited for projects up to 36 months.

We expect to fund between six to eight projects within the Healthy Urban Living call and between three to five projects within the Social Science of the Food-Water-Energy Nexus.

Full proposals should be submitted by **16.00BST/12.00 Midday Brasilia Time, 2 July 2015**. Applicants will be informed of the funding decisions in November 2015.

Projects are expected to start on **1 January 2016**.

As there are two calls for collaborative research, Healthy Urban Living (Annex 1) and the Social Science of the Food-Water-Energy nexus (Annex 2), it is important to ensure that the correct submission route is used when submitting an application. Please read the Je-S Guidance for further details on the submission routes.

**If an application is received to the incorrect call it will be deemed ineligible.**

### **UK eligibility**

UK applicants must meet the ESRC eligibility and disciplinary criteria; see the ESRC Research Funding Guide for eligibility information (<http://www.esrc.ac.uk/RFG>). The Newton Fund requires that the funding be awarded according to Official Development Assistance (ODA) guidelines. All applications under this call must therefore be compliant with these guidelines, see <http://www.rcuk.ac.uk/international/newton/partneringscheme/>.

If you are unsure whether your research is suitable for ESRC funding please refer to the RCUK website (<http://www.rcuk.ac.uk/research/Areas>). If further assistance is required please see 'Is my research suitable for ESRC funding?' (<http://www.esrc.ac.uk/funding-and-guidance/applicants/suitable-research.aspx>) or contact: [esrcemit@esrc.ac.uk](mailto:esrcemit@esrc.ac.uk).

As these are interdisciplinary calls applicants who submit a proposal for the Healthy Urban Living call must be eligible for ESRC, AHRC or MRC funding as appropriate. Applicants who submit a proposal for the Social Science of the Food-Water-Energy Nexus must be eligible for ESRC or STFC funding as appropriate.

Associated studentships are not permitted through this call.

### **Brazilian eligibility**

Applicants from the State of São Paulo must consult FAPESP about their eligibility before starting to prepare a proposal with colleagues in the UK. If you do not consult with FAPESP and submit a proposal, it might be rejected without review.

Applicants in the State of São Paulo, Brazil must note that the requirements for eligibility are those applied normally to FAPESP Thematic Grants, described at <http://www.fapesp.br/176>.

FAPESP eligibility for this call includes the requirement of:

- A PhD or equivalent qualification
- A formal contract with a research institution in the State of São Paulo
- Significant scientific or technological production
- Proven experience and expertise in the area of the project, demonstrated by:
  - Quality, regularity and impact of scientific and technological production
  - Supervision of researchers at the postgraduate level; this is defined as supervision of at least two PhD students and at least two Post-Doctoral researchers
  - Experience in scientific exchange and execution of research projects in collaboration with researchers from institutions in Brazil and other countries; this is defined as having joint publications with international colleagues
  - Ability to form research groups with recognised results in the area of research; this is defined as proven leadership of a research team in the subject area.

Applicants from other states should consult CONFAP about their eligibility before starting to prepare a proposal with colleagues in the UK. If you do not consult with CONFAP and submit a proposal, it might be rejected without review.

For further eligibility enquiries:

São Paulo State PIs - please contact [chamada\\_nf\\_cities\\_nexus@fapesp.br](mailto:chamada_nf_cities_nexus@fapesp.br)

Other Brazilian state PIs - please contact [esrc-confap-cnpq@cnpq.br](mailto:esrc-confap-cnpq@cnpq.br)

### **Application process**

As this is a joint application to ESRC and CONFAP/FAPESP, applicants should ensure that proposals include a **single identical case for support (10 pages max)** and are submitted by **16.00BST/12.00 midday Brasilia time on 2 July 2015** to both ESRC and FAPESP/CNPq. Applications received after this deadline will not be considered for funding.

- The UK application should be submitted through the UK Research Councils grant submission system Je-S (further details on this below).
- The UK application will have to be submitted to the correct remit:
  - Proposals for Healthy Urban Living should submit under the Je-S call ‘Urban Transformations in Brazil (Newton)
  - Proposals for the Social Science of the Food-Water-Energy Nexus should submit under the Je-S call ‘Nexus in Brazil (Newton)’
- Further details can be found in the Je-S Guidance document.
- Applications from São Paulo State should be submitted directly to FAPESP and must follow instructions listed in [www.fapesp.br/newton/cities](http://www.fapesp.br/newton/cities)
- Applications from other Brazilian states should follow instructions listed in <http://picc.cnpq.br/efomento/form/47-560>.

The costs of the UK institutions will be met from Research Councils funds; those for the Brazilian partner institutions will be met by the relevant agency in Brazil. A **UK-based lead partner** and a **Brazil-based lead partner** should be identified to liaise with the funding agency in their respective countries.

The **UK-based lead partner** will ensure the application is submitted via the Je-S system. If the UK application comes from multiple institutions the application should be made by the UK-based lead partner’s host institution. Further information is available on the Je-S website (<https://je-s.rcuk.ac.uk/Jes2WebLoginSite/Login.aspx>).

The **Brazil-based lead partner** will submit the proposal (in English) using the joint proposal format either to FAPESP’s electronic submission system (SAGE) <http://www.fapesp.br/sage/> (if from São Paulo State) or <http://picc.cnpq.br/efomento/form/47-560> (if from other Brazilian states) by the stipulated closing date.

Applicants should ensure the following documents are submitted to both ESRC and to FAPESP (for researchers based in São Paulo, Brazil) or CNPq (for researchers from other Brazilian states) by **16.00BST/12.00 Midday Brasilia time 2 July 2015**.

- **Case for support (*Projeto de pesquisa*) (ten pages max)**
  - Title
  - Aims and objectives (statement of the problems)
  - Research questions being addressed and the methods for analysis
  - Expected research results for both academic and potential users (articles, papers, datasets, events etc)
  - Timetable with project milestones
- **Justification of resources (two pages per country)**

Explanation of why the requested resources are appropriate for the proposed research, taking into account the nature and complexity of the research proposal.

- **Pathways to Impact (two pages max)**

Description of how the potential impacts of the research will be realised, for example how the research results will be disseminated. This attachment is specific to non-academic users and beneficiaries of the research including, for instance, the public sector, private sector, civil society or the wider public in general.

- CV (two pages max for each named researcher include a brief list of up to 15 project-related personal publications) – a template is provided for the Brazilian researchers on the call web page
- List of publications cited in proposal (one page max)
- Letters of support (only if applicable)

Exceptionally letters of support can be submitted as part of a proposal, provided they are essential to the successful conduct of the research (eg confirming access to datasets, or confirming access to or use of the facilities provided by named organisations).

### **Other attachments mandatory for this call**

- **International Funding Agency Resource Form** – to be uploaded to both the UK and Brazil submission platforms.

Requirements include:

- Role, name and department of all researchers and staff
- Total funding amounts applied for from each funding agency
- Financial cost template
- **Brazilian work plan** for each of the scholarships requested for graduate students or post-docs (short plan, two pages max) - **For Brazilian researchers only** - this is not applicable to UK researchers.
- **Statement of ODA relevance** (one page max) - As the UK funds for this call come from the Newton Fund any funding must contribute to economic development and poverty alleviation in developing countries. Please describe how the whole proposed project is ODA compliant. **For UK researchers only** - this is not applicable to Brazilian researchers

Further information is available at <http://www.esrc.ac.uk/funding-and-guidance/applicants/how-to.aspx>. Applicants to FAPESP please consult the Guidelines for this call at [www.fapesp.br/newton/cities](http://www.fapesp.br/newton/cities)

### **UK**

You should prepare and submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>). Please see the specific Je-S guidance notes for this call for details on how to apply.

ESRC must receive your application by **16.00BST on 2 July 2015**.

## **Brazil**

- São Paulo

Applicants to FAPESP please consult the Guidelines for this call at [www.fapesp.br/newton/cities](http://www.fapesp.br/newton/cities).

Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. You must have proof that your application to FAPESP was mailed before **12.00 (Brasilia time) on 2 July 2015**.

- Other Brazilian States

You should prepare and submit your proposal using the Carlos Chagas CNPq electronic platform (<http://picc.cnpq.br/efomento/form/47-560>).

Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. CNPq must receive your application by **12.00 (Brasilia time) on 2 July 2015**.

### **Assessment of proposals**

Once a joint application has been received and accepted as eligible at ESRC and at FAPESP/CNPq, each agency will send the proposal to peer reviewers drawn separately by the UK and Brazil.

Proposals that receive supportive responses from the reviewers will be considered by a single joint ESRC/CONFAP/CNPq assessment panel.

The reviewers and panel will be asked to assess the proposals against the fit to the call and the assessment criteria.

A rank ordered list will be produced by the assessment panel, and ESRC, CONFAP (through the relevant Brazilian funding agencies) and CNPq will then fund as far down the list as either quality or funds permit.

In each stage of the proposal process the national agencies will assess for potential conflicts of interest. A conflict of interest is given if the reviewer is directly affected by the subject matter of the funding project, or if there are other reasons to raise doubts about the impartiality of their specialist evaluations. Reviewers are required to declare any personal interests, disqualifying themselves if they can in any way benefit from the approval or rejection of the proposal.

Funding decisions will be made by November 2015.

The proposals will be assessed on their fit to the scope of the call and to the criteria as follows:

- Relevance to the themes of the call
- The originality and potential contribution to new knowledge and/or practice

- Appropriateness of the research design, work plan and research team, including an assessment of the UK-Brazil collaboration
- The justified costings and value for money of the research
- The proposed outputs, dissemination plans and likely impact of the work.

## Key dates

- Closing date for proposals to ESRC and CONFAP – **2 July 2015**
- Panel meeting – October 2015
- Successful proposals announced – November 2015
- Grants funded/commence – January 2016

## Contacts

Any enquiries related to this call should be directed to:

### UK

- ESRC  
Email: [newtonbrazil@esrc.ac.uk](mailto:newtonbrazil@esrc.ac.uk)

For queries or issues dealing with Je-S please contact Je-S helpdesk.

- Je-S Help desk  
Email: [jeshelp@rcuk.ac.uk](mailto:jeshelp@rcuk.ac.uk)  
Telephone: +44 (0) 1793 44 4164

### Brazil

- São Paulo  
Email: [chamada\\_nf\\_cities\\_nexus@fapesp.br](mailto:chamada_nf_cities_nexus@fapesp.br)
- Other Brazilian states  
Email: [esrc-confap-cnpq@cnpq.br](mailto:esrc-confap-cnpq@cnpq.br)



## **Annex I: Healthy Urban Living**

Je-S Call: Urban Transformations in Brazil (Newton)

Brazil is a major urbanized country with 85 per cent of its national population living in urban areas. But metropolitan growth generates particular dilemmas for the governance of healthy urban living. Brazil's urban hierarchy is characterized by some of the biggest cities in the world and also some of the most socially polarized, along with a large number of medium and smaller urban areas, creating many challenges for systems of governance, social inclusion and health.

This call focuses on the diverse and context specific challenges of healthy urban living. Urban planning and development, considered in the broadest sense, greatly influence population health outcomes. Key considerations include: the location and connectivity of health and care services; blue/green spaces for leisure and cultural activities; infrastructure; community safety; and housing; all of which play a significant role in creating environments that enhance people's chance of a long and healthy life and promote wellbeing. A major challenge facing urban areas is to develop more integrated strategies for healthy urban living and develop better understanding of the social and economic determinants of health and wellbeing.

Existing understanding of urban health and wellbeing draws largely on research and trajectories of knowledge developed in higher income countries. Brazil has some of the largest cities in the world but comparatively thin institutional support especially at the scale of local government. In addition, smaller urban areas often have fewer formal resources and adequate infrastructure to support healthy urban living. Brazil also faces a number of additional challenges not common to the contexts of higher income countries, such as communicable diseases and a legacy of global inequality and instability. These differences mean that existing knowledge can be difficult to apply and further research is required to develop context sensitive approaches and solutions to meet the significant challenges of urban health and wellbeing in Brazil.

### **Scope**

The purpose of this call is to fund high-quality collaborative and interdisciplinary research on the topic of Healthy Urban Living in Brazil.

This call is framed in terms of the World Health Organisation definition of health as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'<sup>1</sup> and will fund projects that explore this understanding of health in the context of urban living at a variety of scales including the region, city, town, and smaller settlement level. While proposals may take a specific health and wellbeing topic they must do so in the context of the broader urban themes described below. We also welcome projects that encompass a comparative approach and this might include research which explores:

- different urban areas, communities or timeframes within an individual city
- different urban areas within Brazil
- comparing the Brazilian experience with urban contexts in other countries
- opportunities for shared lessons with other regions and cities

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<sup>1</sup> Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no 2, p 100) and entered into force on 7 April 1948.

- comparative projects that encompass a historical perspective and draw lessons from the past for addressing contemporary issues or future development.

Proposals should consider the range of complex systems and interactions which influence urban health and wellbeing and the relationship between environmental and behavioural change. While changes to urban form and environment can improve health outcomes, this relationship is uncertain and not necessarily easy to predict. Similarly behavioural changes can have significant effects on urban health and wellbeing but often need to be supported by appropriate and accessible infrastructure or they risk detrimental effects.

Proposals must meet the ODA requirements of the Newton Fund and support the economic development and wellbeing of Brazil but, where possible, drawing links to global initiatives that relate to healthy urban living such as the Sustainable Development Goals or Habitat III is also encouraged.

### **Methodologies**

Although all projects must be led by social science, interdisciplinarity is strongly encouraged and the call welcomes the use of a wide range of methodologies. These might include:

- Evaluation of policies, delivery models and urban health interventions
- Case studies and comparisons of implementation to understand what works, why, and in what context
- Participatory methodologies that provide creative ways of understanding and articulating the needs and experiences of different groups or communities
- Coproduced research to support local community networks, better engagement with formal governance processes, education about health risks, and creation of safer and enjoyable public spaces

The call will also consider proposals that question what is considered reputable and valuable evidence in decision making, to encouraging the innovative use of existing evidence and innovative new forms of evidence for healthy urban living.

### **Themes**

Proposals should clearly identify one or more of these themes as the focus of the research project and demonstrate how it will be applied to the development of healthy cities.

- Urban Design, Planning, Housing and Infrastructure
- Communities, Culture and Heritage
- Leadership, Governance and Institutions

In addition all proposals **must** also address 'Health Inequalities and Justice'.

### **Urban Design, Planning, Housing and Infrastructure**

It is important to understand how urban form and the material environment can impact upon, and be utilized to improve health, reduce urban health inequalities and promote wellbeing. Housing is a key example and changes in tenancy security or housing quality are important factors in community wellbeing and individual health. Infrastructure, ie, transportation, educational entities, health services, leisure opportunities and other utility systems ie sanitation are also important determinants of health outcomes. Furthermore, the return on investment for housing and infrastructure decisions often fails to account for the

broader context of communities, sustainability or wellbeing and research could develop tools to enhance decision making in this area.

Proposals might consider the multiple levels and scales at which design, planning, housing and infrastructure can be implemented; from formal urban government through to families and communities creating and modifying their homes and streets. Urban design and planning have a powerful effect in shaping communities and societies. New and innovative approaches to urban design and planning, including service design, therefore have substantial potential to have positive impacts on urban residents – particularly the most vulnerable.

### **Communities, Culture and Heritage**

Strong communities can play a significant role in the promotion of health and wellbeing. Families, cohesive neighborhoods, social networks, the preservation of tangible and intangible heritage, can make a critical contribution to health and provide social care that might otherwise fall to the state. Community action on healthy cities may involve a range of innovative interventions such as creative, performative and visual arts-based practices. Proposals could consider specific cultural traditions in Brazil which can be drawn upon to help empower different cultural groups in communities and to form local and community-based health initiatives.

It is important to understand existing formal and informal networks of social care and support, and to create innovative solutions to health and wellbeing needs. Proposals could work creatively to support communities to articulate their needs effectively, or create tools to support this process. Proposals could also explore how different policies have changed the role of the community in the promotion of health and wellbeing such as the removal of funding for health and social care services.

### **Leadership, Governance and Institutions**

The creation, development and management of healthy cities incorporate the participation and engagement of many different forms of governance and leadership. Cross-sectoral processes that move beyond the perception of health as being a single policy portfolio are particularly necessary in order to promote broad increases in health and wellbeing across the lifecourse and for multiple demographic groups.

Proposals might consider the institutional or governance barriers to creating healthy cities, path dependencies, or how different forms of governance could be implemented. Different levels of governance might be appropriate for implementation of different approaches to health promotion and management. Formal and informal services and leadership both contribute to the creation of healthy cities with multiple levels of governance involved in managing the urban policies and health administration. Many countries face the question of devolution of powers to city governance and research might consider how this could be applied in the Brazilian context, or offer insights to empower local communities and decision makers to promote health and wellbeing.

**In addition to one of these priority themes all projects applying to this call must explicitly address the issue of ‘Health Inequalities and Justice’.**

There are significant inequalities in health and wellbeing outcomes, most pronounced between rich and poor communities and individuals. These inequalities include differential exposure to risk, ability to respond to stress, access to resources to support health, health

and nutrition inequalities, and cumulative effects of health inequality on long term health, morbidity and mortality. Health inequalities are only increasing and there are links between different types of inequality eg income inequalities and health inequalities. Health inequality detracts from the overall productivity and effectiveness of a society and economy, promoting unrest and putting strain on infrastructures and services. Inequality and justice therefore cross-cut the themes identified above and must be explicitly addressed by all proposals as part of this call.

## **Annex 2: Social Science of the Food-Water-Energy nexus**

Je-S Call: Nexus in Brazil (Newton)

### **Introduction**

The aim of this call is to fund innovative UK-Brazil research partnerships that address some of the challenges presented by the energy-water-food nexus to the economic development and welfare of Brazil. International and interdisciplinary social science led research can offer new insights, approaches, tools and methods that address these challenges.

This funding initiative recognises the global connectedness challenges posed by issues such as equitable access to resources; understanding and encouragement of sustainable behaviours; cost-benefit analysis of climate change mitigation and adaptation interventions; economic threats and opportunities of the sustainability agenda; security of and competition for resources, and understanding trade-offs; green growth and innovation; financing the green economy; new technologies and the question of their public acceptance; the promotion of effective interdisciplinary work to address these complex and connected issues.

The uniquely complex nature of these interdependent issues has been recognised in a number of key international meetings where the opportunity for social science to make ground-breaking contributions to address these challenges for humanity has been highlighted.

The key challenge areas include:

- Sustainable prosperity – financing the green economy and sustainable growth; economic threats and opportunities of the sustainability agenda; innovative green growth
- Resilience and societal transformations - preparedness in coping with shocks; security of and competition for resources; issues of resource conflicts
- Consumption - behavioural and socio-cultural changes; understanding and encouraging sustainable behaviours; new technologies and public acceptance
- Shaping public policy - innovative methods development in complexity; analysis and testing of climate change mitigation and adaptation interventions
- Governance of sustainable resource use - equitable access to resources, and understanding trade-offs; externalities and challenges to existing governance

These interdisciplinary programmes are tackling complex, global challenges that have social science at their heart. Each priority tackles a unique and specific question, yet integrated within each is a trans-disciplinary understanding and vital linkages across energy, water and food. Overarching these themes is the promotion of effective interdisciplinary working to address these complex and connected issues.

### **Themes**

Based on consultation with the research community in the participating countries, the following research themes are identified:

### **Measuring, modelling and understanding the Nexus**

This research collaboration between Brazil and the UK provides an exciting opportunity to exchange and develop new approaches, research tools and methods to address complex nexus challenges. Respective challenges pose pressing problems in Brazil and make the development of new quantitative and qualitative approaches, research tools and methods necessary for addressing issues of the water-food-energy nexus in order to create sustainable solutions for environmental changes and the wellbeing. Future research in this theme might consider:

- developing a robust quantitative evidence base to underpin modelling and to aid assessment and evaluation of options on the nexus within the Brazilian context
- improving existing metrics and tools and devising new ones for characterising and mapping trade-offs
- modelling the economic and ecological position and role of Brazil globally
- progress the development and exchange of novel research tools, data and methods designed to address the nexus challenges in Brazil
- strengthening the integration of quantitative and qualitative approaches within Brazilian social science
- analysing the role of evidence in policy and regulation to address Brazilian nexus challenges.

### **Innovation for Sustainable Transformations**

Social and technological innovation offers promising potential solutions to nexus challenges for Brazil, but research is needed to examine how to take these forward. Future research within this theme could consider:

- how emergent technologies and approaches across multiple sectors can provide sustainable transformations
- the role of sustainable solutions across multiple spatial and regional scales
- how the dynamics of social dimensions of technological innovations in Brazil can be better understood
- the role of mapping and 'environmental footprinting' the water-energy-food nexus across urban and rural areas.

### **The Political Economy and Governance of the Nexus**

Economics and social sciences offer critical insights that help to characterize nexus challenges to better understand the broad political and economic drivers for unsustainable outcomes. Research in this area could help to:

- explore effective policy and practice for managing resources equitably at the nexus
- identify key sectoral and regional institutions and networks whose activities impact and have influence over nexus challenges in Brazil
- determine the role of appropriate policy instruments and how they can be best implemented to mitigate nexus challenges
- developing approaches to consider requirements for managerial and leadership capacity building
- explore the scope for comparative studies that examine and learn from successful nexus management strategies across the globe.

## **Human welfare, development and the Nexus**

Human welfare and development are fundamentally affected by the water-energy-food nexus. Social science can help to understand the ways in which human development issues may be compounded by, or themselves compound nexus interactions. Future research within this theme might explore:

- The role of increased access to education and training enhancing social mobility and developing resilience to nexus threats
- examine and understand structural inequalities affecting access to nexus resources and services
- analyse and comprehend the interaction between the different needs and aspirations of diverse communities in Brazil and the challenges presented at the nexus
- explore and map out the complex relationships between changes in land use, migration, employment and social justice in order to demonstrate how these impact nexus challenges.