SIXTH FRAMEWORK PROGRAMME
PRIORITY 7
CITIZENS AND GOVERNANCE IN A KNOWLEDGE-BASED SOCIETY

Contract for:

SPECIFIC TARGETED RESEARCH OR INNOVATION PROJECT

Annex I - "Description of Work"

Project acronym: ResIST
Project full title: Researching Inequality through Science and Technology
Proposal/Contract no.: Proposal 029052 Contract no: CIT5-CT-2006-029052
Related to other Contract no.: *(to be completed by Commission)*

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1. Project Summary

Full title:	Researching Inequality through Science and Technology
Acronym:	ResIST
Research Topic:	Inequalities in society and their consequences (2.2.2)

Abstract:

Recent research has established that S&T do not merely cause or alleviate inequality, but are more profoundly implicated in social relations of distribution and access. The most pervasive and obdurate sources of social distribution are enshrined and entrenched in S&T systems.

This Project's objective is to understand processes that contribute to the increase in inequalities *through* the role of S&T, but also to understand processes that contribute to mitigate inequalities *through* S&T. The enhanced role of S&T in the global knowledge economy gives such understanding urgency. ResIST will:

1. Analyze how global policy contexts for key S&T processes affect the distribution and redistribution of knowledge resources, and the scope for alternative framings (WP 1)

2. Identify the features of effective policies and programmes to build S&T human capital and institutional capacity in disadvantaged populations and places (WP 2)

3. Critically assess new initiatives to construct S&T priorities reflecting the needs of the disadvantaged, and review current constraints and future opportunities for their full realization (WP 3A)

4. Map structures of accountability in the distribution of technological risks, and propose effective accountability channels to protect the poor from such risks (WP 3B)

5. Model the impact of new research-based technologies on the poor through dynamics such as employment, lowering costs, and impact on public services (WP 4)

6. In a horizontal activity, involve policymaker and practitioner stakeholders in three representative world regions – in Europe, in Southern Africa and in the Caribbean and Latin America - in the process of developing and implementing options identified in the Project. In particular use the insights developed in 1-5 to test with stakeholder audiences the scope to develop tools to assess

   a. S&T policy options to achieve wider social inclusiveness for developed and developing countries and

   b. the possible distributional impacts of research programmes (WP 0)

2. Project Objectives

2.1 Our objectives in summary

1. To analyse the ways in which regulatory regimes, policies and practices involving S&T contribute to the reproduction of social and economic and inequalities within and between European member states, and between the EU and candidate and developing countries;

2. To propose more systematic ways to assess prospective research policies, the introduction of new technologies, and new research programme proposals so as to offer the opportunity to:

- reframe policy and practice by acknowledging and attempting to mitigate the most negative potential distributional effects of S&T;
- enhance social inclusion in the processes of technology design, diffusion and innovation;
- introduce new accountability channels in scientific governance which reflect these aims.

3. To conduct the research in an interactive manner with policy and practice communities in EU, candidate and developing countries so as to distil the broadest range of experience and needs, and to secure effective social learning by researchers and policymakers, and early change.

2.2 The context in brief

This project focuses on whether and how science and technology are contributing to the production, reproduction, and reduction of inequalities today, and what scope there is for policy change. It is premised on the insight that Science and Technology are the key phenomena for unlocking a novel understanding of the origins and likely means of alleviating inequality. A special feature of the proposed research is its adoption and development of an innovative analytic framework for understanding the social dynamics of inequality.

A large body of research in recent years has established that science and technology (S&T) do not merely cause or alleviate inequality, but are also much more profoundly implicated in social relations of distribution and access. Thus research in Science and Technology Studies has established that "science is politics by other means" and that "technology is congealed social relations". This means that the most pervasive and obdurate sources of social distribution are enshrined and entrenched in systems of S&T. Moreover, as political scientists and philosophers of technology have persuasively demonstrated, it is precisely by virtue of their entrenchment in systems of S&T that these sources of inequality are concealed from ready recognition. These sources of inequality are overlooked because they are apprehended as technical issues, not readily accessible to social scientific analysis.

By contrast, we see S&T as inherently associated with distributional issues: issues of scientific and technological capacity, issues of access to science and science-based products, and issues of political representation at many levels of governance which determine social distribution. However, our view of the necessary and central involvement of S&T in these issues does not lead us to a negative view of the social impacts of S&T as such. Rather we see that S&T policies and

practices may be linked to a range of distributive outcomes, some of them contributing to increases in inequalities, others to more inclusive and socially just policies and practices. It is the role of research to help make explicit these linkages and the range of policy choices and accountability mechanisms which then become available.

For the EU Science and technology related inequalities are important policy challenges at the following levels:

- the distribution of science and technology based industries and the implication for economic competitiveness;
- the distribution of science and technology based needs, as well as risks, and of the associated capabilities to address these;
- the distribution of benefits and impacts of emergent technologies.

The scrutiny of social and economic policies as they are served by S&T and of their impacts on the distribution of benefits, as well as of costs and risks, across and between societies should be a central concern of research into the relationship of science and society. Distributional issues have a geographical dimension, both within the EU and in relations of the EU with other countries, namely the INCO countries. But these issues have other implications as well. They may affect different types of populations by either contributing to enforce current hierarchies of power and wealth or by providing the means to empower subaltern, marginal or excluded sectors. Technologies are certainly one category of resources that may be used to produce either of these contradictory outcomes, and as such have a part to play in the EU's wider foreign, security and development policy.

1.3 ResIST's specific objectives

This Project has as its main objective to understand the processes that contribute to the increase in inequalities *through* the role of science and technology, but also, and most importantly, to understand the processes that contribute to mitigate inequalities *through* the role of science and technology.

While it is now well recognised that science and technology activities are a significant input to socio-economic development, the wider implications in terms of different forms of inequalities are often overlooked. In particular the implementation of systems that can contribute, at the policy level, to better address such concerns is at the centre of the aims of the Project.

The Project will attain this main objective through the analysis of the following specific objectives:

- Analyze how the policy contexts for key S&T processes affect the distribution and redistribution of knowledge resources and the scope for alternative framings (Work Package 1)

  Increasing inequalities are at the heart of global policy challenges. As such, there is a need to consider S&T processes within their wider contexts, relating the processes of distribution and redistribution of knowledge resources to different policy dimensions. In this sense, it is important to understand the reinforcing mechanisms between different policy mechanisms, their emphasis on growth vs. inequalities, as well as the importance of the role of more and less developed countries in their making.

- Identify the characteristics of effective policies and programmes in building S&T human capital and institutional capacity in disadvantaged populations and places (Work Package 2)

  From earlier policies focusing on large investment projects as levers of growth, increasing relevance is being given to the development of human capital and institutional capacity building in disadvantaged populations and places. However, in comparison to physical infrastructures, human capital, which is also central to the process of institutional capacity building, is more mobile and, as such, more volatile. We will analyse, at different geographical levels, human capital flows. In particular we will contribute to better understand scientific migration and location decision-making, the relationship between human mobility flows and processes of knowledge transfer, the role of diasporas in capacity building, the importance of career opportunities as resources in their own right.

- Critically assess new initiatives to construct science and technology priorities that reflect the needs of the disadvantaged, and review current constraints and future opportunities for their full realization (Work Package 3A)

  In part, the distributional consequences of science and policy and practices are built, to a larger or lesser extent, into the political system. Because accountability systems – the means by which such consequences can be recognised and assessed – embody a whole range of normative assumptions about the purposes and uses of S&T, the boundary between different accountability systems is an important site for the analysis of scientific governance, and one in which any reconfiguring of interests will take place. Accountability systems attuned to the needs of the disadvantaged are thus the prerequisite for reorienting scientific governance towards greater social inclusion in building S&T priorities and in distributing its products. The Project will examine the construction of such alternative accountability systems involving experimental initiatives of a variety of kinds in S&T capacity building and priority setting with the aim of remedying inequality, both in 'top-down' as well as in 'bottom-up' initiatives, addressing our concerns to improve the representation of the disadvantaged in the design and implementation of technical change. Examining the values and processes which inform accountability in these contexts will help give them a common framing and provide a deeper understanding of their successes and failures in securing wider embedding in policy and practice.

- Map structures of accountability in the distribution of technological risks, and develop hypotheses on the most effective accountability channels to protect the poor from those risks. (Work Package 3B)

  A second layer of consequences can be examined through the redistributional issues surrounding mundane, everyday technologies. Besides decision-making processes underlying future initiatives and their consequences, accountability systems must also deal with policies for the distribution of technological risks in the present. Three studies will look at textile life-cycles, at vaccines, and at e-waste. The project will develop hypotheses on the most effective accountability channels to protect the poor from those risks.

- Model the impact of new research-based technologies for the poor through dynamics such as employment, cost, and public services. (Work Package 4)

  New technologies often lead to new industries, which inevitably disrupt existing patterns of trade and employment. There are winners and losers in these changes. According to one argument outlined above, knowledge-holding individuals and societies are more likely to be winners and resource-based livelihoods and societies are likely to be losers. The Project will develop tools for prospective assessment of the distributional effects of new technologies, effects that may occur through three routes: *Employment and wages*; *Lowering costs*; *Improving public services*. The Project will follow a set of key technologies in several national contexts to examine their effects in these three dimensions.

- In a horizontal activity running throughout the project, involve policymakers and practitioners in representative world regions in the process of developing and implementing the options identified under the other aims. In particular, through this work package we would test out in discussion with stakeholders in our three representative world regions the possibility of going beyond the qualitative heuristics of our analysis towards the production of tools and instruments to assess
  - S&T policy options to achieve wider social inclusiveness for developed and developing countries and
  - the possible distributional impacts of FP7 programmes.

  The Project has at its centre policy concerns. A specific objective of the Project, running horizontally through all its activities, will be to maintain a continued and developing dialogue with those responsible for policy and practice in sets of countries which exemplify different forms of inequality in S&T. This activity will run throughout the project and, in order to maintain focus on the projects aims, this team involves leaders of the different activities. The objective will be both to learn from policy-makers on their own decision-making processes, as well as to actively disseminate the ongoing results of the project and better focus the following phases. In this context the Project will develop the putative framework on structural, representational and distributional inequalities in S&T capacity building; act as a space for interrogation of and dialogue with the ongoing work with the aim of retaining focus on the overall objectives of the project to facilitate policy and practice which can support balanced growth; establish effective links with policy and practice in the four selected representative geoeconomic areas as a basis for sustained mutual learning on issues, mechanisms and models, and the means of embedding change in policy and practice.

  As stated above, our basic principle is that, given the appropriate conditions and accountability systems, S&T have a central role in mitigating inequalities. Research programmes, such as those to be funded by the European Commission under FP7, are major redistributors as well as creators of technical capacities in the form of human resources, infrastructure, and intellectual property rights. Building upon the results of the Project and of other authors, the Project will contribute to better assess the options faced by S&T policies to achieve wider social inclusiveness. It aims at producing a framework for the analysis of research programmes, creating the scope to broaden the potential range of research beneficiaries. If stakeholder workshop discussions are favourable, the Project will trial such assessment frameworks by undertaking preliminary analysis of the (then ongoing) FP7. (Work Package 0)

3 List of Participants

Partic.Role *	**Partic. no.**	**Participant name**	**Participant short name**	**Country**	**Date enter project**	**Date exit project**
CO	1	James Martin Institute for Science and Civilization, Said Business School Chancellor, Masters and Scholars of the University of Oxford	UOXF.MQ	UK	Month 1	Month 36
CR	2	University of Leeds, UK	UNIVLEEDS	UK	Month 1	Month 36
CR	3	Institute for Studies in Innovation, Research and Education	NIFU STEP	Norway	Month 1	Month 36
CR	4	Universiteit van Amsterdam	UvA	Netherlands	Month 1	Month 36
CR	5	Centro de Estudos Sociais, Universidade de Coimbra	CES	Portugal	Month 1	Month 36
CR	6	University of Malta	UoM	Malta	Month 1	Month 36
CR	7	Ortadogu Teknopark A.S	METUTECH	Turkey	Month 1	Month 36
CR	8	Universidade Eduardo Mondlane	UEM	Mozambique	Month 1	Month 36
CR	9	Stellenbosch University	SU	South Africa	Month 1	Month 36
CR	10	Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V,	FhG/ISI	Germany	Month 1	Month 36
CR**	11	The Technology Policy and Assessment Center, Georgia Institute of Technology	GTRC	United States	Month 1	Month 36

*CO = Coordinator
CR = Contractor
** Separately funded – contribution not sought from the Commission

4. Relevance to the objectives of Priority 7

A Summary State of the Art and how ResIST goes beyond this

Contemporary societies have been described by many observers and analysts as a Knowledge Societies or Knowledge-based Societies. This description is tightly linked to the notion of a Knowledge Economy that would provide the basis for the expansion of knowledge and innovation. According to this view, access to and control of knowledge is a fundamental factor in the production and reproduction of inequalities, both within Europe and between Europe and the developing world. The main objective of this project is to explore the connections between key institutions in the Knowledge Economy and the dynamics of 21st century inequalities, especially on a global scale. The very concepts of Knowledge Economy and Knowledge Society – which were proposed as characterizations of turn-of-the-century societies in the Northern hemisphere – will have to be re-examined for their adequacy to describe economies and societies beyond the North in the light of this exploration.

This project focuses on whether and how science and technology are contributing to the production, reproduction, and reduction of inequalities today, and what scope there is for policy change. It is premised on the insight that Science and Technology are the key phenomena for unlocking a novel understanding of the origins and likely means of alleviating inequality. A special feature of the proposed research is its adoption and development of an innovative analytic framework for understanding the social dynamics of inequality.

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Direct relevance to Priority 7

According to the thematic Priority 7 (Citizens and Governance in a Knowledge-Based Society), research projects should, among other objectives, improve and develop comparative research in terms of methodology, data, and providing significant coverage of EU member states as well as candidate countries. The need for co-operation within and between disciplines is emphasised and the involvement of users and stakeholders in the research process is recommended. The results are expected to contribute to enhanced policy development, analysis and assessment, in particular relating to issues arising from current policy agendas.

The objective of Research Area 2 - options and choices for the development of a knowledge-based society - is to develop an integrated understanding of how a knowledge based society can promote the societal objectives of the EU set at the Lisbon summit and subsequent European Councils of sustainable development, social and territorial cohesion and improved quality of life, with due consideration to the variety of social models in Europe.

2.2.2 - Inequalities in society and their consequences – the section of the call to which this proposal directly responds - sets an objective to understand how inequalities in society change, are reproduced, and their economic and social consequences, including the effects of production and reproduction of social inequalities and their rise or fall; how such inequalities and their consequences vary between different European societies and in other regions of the world, including differences in social mobility.

The ResIST proposal addresses these objectives head-on. Its specific insight is to regard knowledge not just as one contributory factor in inequality, but to see in science and technology the key phenomena for unlocking a novel understanding of the origins and likely means of alleviating inequality more generally. Through pursuing this understanding, we are able to broaden our sense of the range of policy mechanisms and accountability channels that can be used to alleviate or, in specific circumstances, eliminate this most obdurate of social phenomena.

The project aims to contribute significantly to our understanding of a broad range of issues concerned with distributive and accountability issues in S&T. The whole project is articulated around engagement with policy and practitioner audiences in three world regions so as to map in their interests, concerns, experiences and understandings at the beginning of the project and to accelerate social learning in its closing phases. As part of that we hope to be able to offer a framework by which the distributive potential of further research projects can be assessed. The potential development of this and its application – including application to future generations of European research projects – will be assessed in the last round of regional workshops.

5. Potential impact

5.1 Contributions to standards

There are no expected contributions to national or international standards.

5.2 Contribution to policy developments

(a) The policy significance of our agenda

Why has the critical examination of the relationship between S&T factors and inequalities become so relevant at this point in time? What is the significance of this relationship for policy for science, for technology and in remediating inequality. There are a number of compelling reasons for a close scrutiny of this relationship:

a) The enhanced role of science and technology in economic and social development

- The knowledge economy gives increased salience to the role of S&T in economic development;
- We may be on the edge of a wave of technological developments that claim to be quite transformative of capacities to control nature at some fundamental level including the nature of ourselves – our lifespan, and our physical, cognitive and emotional capacities [Convergent Technologies Report, European Commission, 2004]. The risk associated with these new technologies is that they will exacerbate inequalities, creating virtually unbridgeable technological divides. The opportunity is that given that such technologies are in an early fluid state, we can learn how to shape their innovation trajectory to make it more socially inclusive or mitigate its negative distributional features.

b) Globalisation and global security

- The global is now being acknowledged as everybody's back yard in terms of increased threats of climate change, HIV and new threats of global pandemics such as SARS, bird flu, etc. These emergent global issues increase the importance of local capacities to analyse problems and to contribute to local and global solutions;
- At the same time economic migration under globalisation has exacerbated inequalities through a net transfer, in many cases, of highly trained personnel – particularly in health care – from poorer to richer countries. Such global migration processes have two main implications in this respect. On the one hand, they reflect a process of global division of labour, based precisely on the distribution of science and technology capabilities, with the most knowledge-intensive jobs concentrated in the core countries, while the less skilled functions are displaced towards the peripheral countries. This means, on the one hand, that it is difficult to attract the highly-qualified scientists and professionals, often trained abroad, back to their home, less developed, countries, which often funded their graduate training, leading to the well-known phenomenon of the brain drain. On the other hand, for the less qualified jobs that cannot be displaced, this leads to well-known patterns of mobility of less qualified workforce from peripheral countries to core countries where they take up jobs compatible with low levels of schooling and low qualifications (in some cases, even if at their arrival in the host country they take up menial jobs, their educational levels and qualification are significantly higher than those of "native" workers, which provides opportunities for upward mobility). But the enlargement of the highly-skilled diasporas also means that *networks* can, in the future, become more important than *geography*. This is becoming clear, for example in the United States, with the central role

of scientists from East Asian countries in the US national system of innovation, or with the development of the software industry in India based equally on such networks;

- S&T have both a central role in the globalisation process, with technologies, such as ICTs, facilitating global communication, and are also central to some of the main global issues, such as those mentioned above.

c) The institutionalisation of inequality:

- Inequality has become a by-product of international trade and technology transfer regimes. Those regimes are more concerned with using the private sector to promote growth in the world economy than about issues of equality and fairness in distributing the goods and services that arise from that growth. Even where under the terms of an international treaty developing states are allowed to opt out of certain provisions – on intellectual property rights, for example – bilateral agreements between rich and poor states often seek to restrict the latter's real freedom of action;
- Whilst in the cold war attempts to restrict flows of knowledge, of new technologies and of personnel, were justified in the West in terms of the maintenance of military superiority (although these often covered a wide range of 'dual-use' technologies) we now witness the emergence of wider restrictions on knowledge transfer – for example through parallel tracks in international scientific conferences for US and non-US citizens – which may be part of wider attempts to establish S&T hegemony in the interests of economic advantage. Triadic competition between Europe, the United States and established or emergent economic powers of East Asia, often a specific justification for science, technology and innovation policy, helps to drive this restrictive approach to knowledge management. In trying to compete with each other, it may be that these regions effectively increase the gap between themselves and other parts of the world;
- Research projects and programmes are themselves major redistributors as well as creators of new technical capacities in the form of human resources, infrastructure and Intellectual Property Rights (IPR). The redistributive effects of research become more important with the increasing scale of research whose primary purpose is to enhance economic competitiveness;
- Mundane practices also have redistributive effects which may be overlooked. For example, recycling of electronic or household waste may contribute to the efficient use of natural resources and the reduction of pollution in the originating 'donor' countries, but offsetting this workers breaking down the products in receiving countries may be exposed to a variety of chemical, physical or biological risks.

The key issue is that S&T policies and practices – some explicit, some unexamined – which are at the core of the governance of the knowledge-based society make significant contributions to the production, reproduction and deepening of inequalities within and between societies.

Any comprehensive approach to either social policy, science policy or development policy needs to understand the scope of these and the potential for their remediation. With the heightened concern about security in the contemporary world, many would also put addressing all bases of inequality at the heart of foreign policy.

(b) The specific policy orientation of ResIST's work

Our work is policy oriented. All our European partners have substantial experience of policy work at national and European level; we have one partner from a new European member state,

the smallest, Malta, and strong links with the largest, Poland, through current research collaborations. The research team for our candidate state for membership, Turkey, have strong links with the Turkish science and technology agency, TUBITAK. CREST at Stellenbosch, has a long line of policy research on the structure and capacities of the South African science and technology system for the South African Government and is a lead partner in the project Africa PRIME. Our Mozambican partner was the Minister for Education, Science and Technology up to January this year. Although we have no formal partner in the Caribbean and South America we have strong links with both and are working to secure the participation of the Caribbean Development Bank as a potential partner, particularly in the delivery of WP0. Not only could they help host one or more of the workshops in their world region, but we believe the bank will be an appropriately demanding customer in framing and assessing the relevance of our work for policy.

More particularly the ResIST project will provide interdisciplinary and international collaboration in order to , *inter alia*:

- Provide a critical examination of the roots of European Policies and those of the Bretton Woods Institutions, and their scope for reframing, having at its centre an experienced lawyer of European policy and an American sociologist who has provided a framework for the relationship between distributional, structural and representational inequality;
- Analyse inequality in the operation of scientific labour markets and in the development and distribution of human capital, taking account of ethnicity and gender concerns, drawing on current and recent studies by our partners from the Centre for the study of Law and Policy in Europe in Leeds and a series of studies by CREST in South Africa;
- Provide a critical analysis of the accountability structures and articulation with the political system of both top-down and bottom-up experimental approaches to widening social inclusion in science and technology; and similarly consider the accountability and the risk distribution issues within and between societies raised by the lifecycles of mundane technologies such as textiles, vaccines and e-waste;
- Provide the basis for broadening the scope of technology assessment by modelling the potential distributive effects of new technologies, including their impact on employment, on costs and on public services, and of major research programmes which help build and distribute technological capacities.

5.3 Risk assessment and related communication strategy

Not applicable to this proposal.

6 Project management

6.1 Project management

The project will be co-ordinated and its overall management ensured by Peter Healey at the James Martin Institute for Science and Civilization, Said Business School, University of Oxford, Partner 1. The responsibility for scientific coordination will also be taken by Professor Steve Rayner and Peter Healey at the JMI. Both have substantial experience of large multi-partner project management.

The James Martin Institute will take overall responsibility for liaising, on behalf of the consortium, with the European Commission, and for fulfilling all the related administrative duties. This will include:

- Corresponding with the European Commission and other third parties;
- Monitoring progress made in accordance with the project time schedule;
- Relaying the milestones and deliverables to the European Commission;
- Monitoring the partners' financial statements, as requested;
- Submitting the financial statements to the European Commission, as specified in the contractual agreement;
- Disbursing European Commission funds to the individual partners;
- Informing the partners of relevant European Commission correspondence;
- Setting-up, through a subcontract, and maintaining the project website.

The James Martin Institute will provide, through its regular management structure and the direct involvement of one member of its team, administrative support (in respect of the above points) to the Co-ordinator. It will also provide secretarial support for the project.

Apart from the aforementioned co-ordination and overall management tasks, the research project will be jointly developed and managed by the eleven partner organisations. Together, the partners will be responsible for the following:

- Developing the research, according to the Work plan, and the four vertical Work packages;
- Managing the project, especially the organisation of the initial conference, six major world regional meetings, workshops associated with the individual work packages and the final dissemination seminar;
- Monitoring progress made within each Work package, according to the time schedule specified;
- Ensuring quality of research and analysis to a high, academic standard;
- Agreeing on any changes to the methodology, project structure and/or deliverables, prior to seeking approval from the European Commission;
- Fulfilling the milestones and deliverables, as outlined in the Work packages.

In principle, decisions concerning the above points will be made, following sufficient deliberation, on the basis of unanimous agreement. In the case of differences of opinion, decisions will be reached on a majority-voting basis, whereby each partner organisation has one vote. The Co-ordinator will organise this process and may use a casting vote in case of a 50:50 decision. In framing these issues and in day to day project management the Coordinator will draw upon a Steering Board comprising the work package leaders: Ackers, Brito, Cozzens, Healey, Kallerud, Knell, Mouton, Nunes and Woolgar.

The main decision-making forum of the partnership will be through Work Package 0. This horizontal work package will be focused on ensuring that the vertical work packages not only meet internal academic objectives but contribute to options for future policy and practice. It will also be the work package chiefly concerned with ensuring dialogue with stakeholders in the three representative world regions on which the work will concentrate. Its major vehicle will be the major regional meetings, which take place in months 6-9 and 32-34. In between these workshops, the partners will communicate by electronic mail, aided by an intranet section on the ResIST website. Thus, a communication flow including all eleven partners will be ensured. This will be reinforced by the role of the coordinator. In addition to acting as co-leader of work package 0, he will contribute significantly to work package 3, and have a substantive foothold in the work of the other three work packages.

For each Work Package, two designated partners will be responsible for the leadership of the Work Package, including the actual organisation of the internal workshops, the maintenance of close contact with the researchers on progress within plans, and being the first point of contact with the co-ordinator in reporting and in identifying problems and solutions. Although we have not achieved perfect gender balance, eight of our 22 core research team are women, and women co-lead four out of five of our work packages.

The responsibility for substantial decisions regarding the content and methodology of the research to be undertaken will rest with the entire research consortium.

The management of this project will be helped by the experience of the participants in working together. All but three partners are members of PRIME. Partners 1, 3, 4 and 5 worked closely together for three years in the FP5 thematic network STAGE. Partners 1, 9 and 11 have been working together since 2003 on the background to this proposal. Most partners met at a project development workshop generously funded by the UK ESRC in March 2005 and most of the Work Package leaders met in September 2005 in preparation for this submission.

6.2 Plan for using and disseminating knowledge

ResIST seeks to throw light on, and to develop strategies for countering an obdurate social problem. In seeing science and technology as integral to inequality in contemporary society and in interrogating its distributional and accountability mechanisms, ResIST will suggest new forms and policies for S&T which are more explicit about social consequences, and more open to change. Its value on utilisation is thus an integral part of its problematic.

ResIST's project design is articulated around the horizontal Work Package 0 whose rationale is user engagement and research utility. One of our partners, as a recent Minister of S&T in a sub-Saharan African country, is already both user and researcher on this research; we will also be collaborating with the Caribbean Development Bank because we are aware that they will be the kind of critical customer that helps to improve product quality.

Our first engagement with users in three world regions – Europe, Southern Africa and the Caribbean and Latin American region takes place early in the project (months 6-9). This is to allow us to

- test the research agenda and the models and approaches coming from the other four work packages with those most likely to be affected by the intended outcomes of the research;
- engage a range of stakeholders with the research;
- mobilise local knowledge sources;
- give access to local research sites and examples of innovative, socially inclusive, practice.

These early meetings will also help establish a virtual audience who will be able to follow our research as it proceeds on the intranet part of our website (see below) and comment.

Our second set of systematic user engagements will take place towards the end of the project. They will allow us to

- early test our research results;
- explore alternative policy framings in realistic settings;
- promote early adoption and social embedding of useful insights and results of the research.

We also hope to create a more general and longer term legacy from these meetings, going beyond the timescale of ResIST itself. First we expect that they will help build a policy constituency for constructive, research-informed debate about alternative framings of research and innovation policies. Second, we look to them to lay the basis for more sustained research on the broad ResIST agenda to construct, critique and assess such policies.

In terms of wider dissemination, the project is scheduled to produce in the public domain, 13 papers or reports, 2 journal articles and one detailed proposal for an edited volume. Experience of the STAGE thematic network suggests that this may be a significant underestimate since the thinking and approach of the project have a multiplier effect through the broader academic production of the partners during the period.

The ResIST website will be organised as a content management system which will allow partners, the coordinator and the administrative assistant to update the site with minimal effort. It will also have a restricted-access intranet section which will constitute an important collaborative resource to the research team and selected partners in policy and practice.

In addition ResIST plans to establish a link with the leading site on science, technology and development, SciDev.net

6.3 Raising public participation and awareness

It is intrinsic to our approach that user engagement through WP0 in the three world regions on which this study focuses includes major stakeholders. However, we believe that our strong line that (a) science and technology are intimately bound up with social inequalities and that (b) research can help us know what to do about it should be a message that the media will want to bring to a wider public. We will thus use the launch of the project to issue media releases in all the participating countries, and in addition will have a media strategy associated with each of the six world regional workshops. Our aim would be to have each of these workshops to be kicked off by a keynote speech by a local thinker or policymaker who would commend attention in that region.

Some of our planned outputs take the form of policy papers. In addition, and in parallel to the publication of each publicly disseminated report, the coordinator will produce a series of two page ResIST briefings summarising in plain English that particular element of the project's work. These will be available on the ResIST website; alternatively, subscribers to that website will be able to register for a subscription service to these.

7. Detailed Implementation Plan

7.1 Introduction – general description and milestones

Our broadest ambitions in pursuing this work is to contribute to a set of policies and practices which allow the fullest expression of our understanding of the Lisbon agenda: to allow economic growth and development to continue in a manner which is environmentally, socially, culturally and politically sustainable, not only within Europe, but globally: what has been called in some quarters 'balanced growth'. This view of sustainability may be rooted in European ambitions for global competitiveness but it also needs to reflect more systematically the needs of the world's poorest and address their need to build capacities in an environmentally and culturally sustainable manner.

Work Package 1 will produce an analytical map of decision-making in the knowledge economy to describe the range of national policies and programmes that shape the national and international flow of knowledge and knowledge-producing capacity. In the same terms it will analyse European and global contexts including the Bretton Woods Institutions, and the United Nations and its agencies. It will also analyse the fast-changing philanthropic scene. The results will be used to frame more detailed analysis of specific distributive and accountability mechanisms in subsequent work packages but written up as a exploration of the inbuilt distributive assumptions and practices of these global framing institutions it should also make a considerable contribution to current debate about their purposes and functioning.

Work Package 2. Work package 2 addresses the issue of human capital and science labour markets. It addresses two dimensions of inequality. Firstly, the issue of individual equity and equality of opportunity in science careers and secondly, the impact of scientific career decision-making and mobility, in particular, on regional inequality and balanced growth. The tension between these two linked dimensions of equality is recognised in the European Research Area strategy. It promises to have impact on our understanding of some of the basic and longstanding issues on human resource issues centred on the role of migration and scientific diasporas in national technological capacity-building and retention, as the basis for the development of an evidence-based approach to policy-making at both national and European level. These include the form barriers to mobility take for third country nationals; the effect of life-course, partnering and parenting on mobility and the (gendered) effects of this on the demographic and social balance of scientific labour markets in sending and receiving regions; the extent to which international migration spawns other forms of knowledge generation and transfer which are not directly related to physical presence, such as diasporic networks and more specific forms of scientific exchange; the extent to which individual countries, and the EU, is reliant on attracting third country researchers to meet skills shortages; and the extent to which sending countries in the developing world benefit or lose from the mobility of researchers. This empirical work will be framed by an analysis of the tensions in EU human resource policies. Then work package aims to contribute directly to policy with papers organised around four sets of issues:

1. Opening access to employment in the European Union for Third Country Researchers
2. Understanding scientific migration and location decision-making
3. Employment as a Scarce Resource: Issues of Individual Equity in Science Careers
4. The relationship between human mobility and the transfer of knowledge/capacity building

Work Package 3 will produce the means to construct alternative accountability systems incorporating the needs of the disadvantaged. Systems of accountability are central to potential

impact on policy because they are the means by which the potential distributional consequences of science and policy and practices can be recognised and assessed – and potentially incorporated – by formal elements of the political system. The work package will examine the construction of such alternative accountability systems in two very different contexts:

- experimental initiatives of a variety of kinds in S&T capacity building and priority setting with the aim of remediating inequality. Some of these will be top down – such as the current attempts to persuade the World Health Organisation of the value of new coalitions of public and private interests in the production and delivery of vaccines for the poor – but the majority will be 'bottom-up',
- redistributional issues associated with the design, development, access to and use of mundane, everyday technologies. Cutting edge technology plays a far smaller role in day to day existence than such mundane technologies which are taken for granted by many in the developed world.

The promised impact of this work package lies in the centrality of accountability systems for scientific governance, and in the subjects under analysis: phenomena which have wide significance for the social distribution of technological risks and benefits but which are often neglected or taken for granted. In this it contrast with and complements institutional arrangements in work package 1 which are identified with distributional and development issues.

Work Package 4 is one of the most ambitious of ResIST's research efforts, and promises significant advances in our understanding of how new technologies impact economies and in what circumstances, and at what rate, they are likely to form a platform for balanced growth through broadening employment, reducing costs, or improving public services. Whilst this is a significant distance from the development of formal tools for broadening technology assessment to take account of these effects, it will provide a qualitative framework for policy use which will increase awareness of the issues, and of possible palliative measures.

Impact is also about the relationship of research with policy and practice. Like other European research, ResIST will produce outputs for a variety of bodies and actors. However, rather than simply produce reports, outlining results, to be sent to these groups, the researchers will initiate on-going engagement with these contexts of application from the beginning of the research. This intention has already shaped the membership of our consortium, and is the main business of a horizontal work package,

Work Package 0. This work package will act as a space for interrogation of and dialogue with the work of the five work packages with the aim of retaining focus on the overall objectives of the project to facilitate policy and practice which can support balanced growth. It will integrate conceptually the work developed in the different WPs, and will integrate the policy concerns and objectives of the different WPs of the project.

One early piece of integration will be a small conference (month 4) bringing in a number of other scholars from complementary work in governance or development studies. This conference would have two main objectives: to review how each work package is proposing to: (a) clarify and operationalise certain key concepts which run through the project, and (b) to incorporate the ethnic and gender dimension.

We have also reserved funds under work package 0 for a small seminar, early on, on our work in China. We have not designated this as one of our deliverables but believe it to be important. China has a particular significance for understanding science, technology and development because of the pace of development of all three in China, and because a socialist market economy may be thought to have a distinctive position on the issues. Because of these distinctive features,

we believe that such a workshop, although in essence exploratory in character, would help us see the challenges of our three world regions in context. In this meeting the ResIST work package leaders would present our plans, and invite responses from a selected group of Chinese researchers and policymakers. Subsequently, we would invite one or two Chinese colleagues to keep in touch with the development of our work by inviting them to participate in key meetings reflecting their particular areas of interest. Whilst we would not rule out closer research collaboration with China in the course of ResIST, such work would have to be separately financed, and of course, complementary rather than competitive with the delivery of our principal objectives under the project (the workshop itself would take less than 1% of our project time). As with some of our wider dissemination arrangements, we would be sympathetic to any wider Commission activity with China which would allow us and others to engage in this way.

In subsequent months Work Package 0 will be based mostly on the implementation of three workshops in three geoeconomic world regions in the early part of the project (months 6-9) and late on (months 32-34). All the work package leaders and significant numbers of the whole research team will attend these workshops.

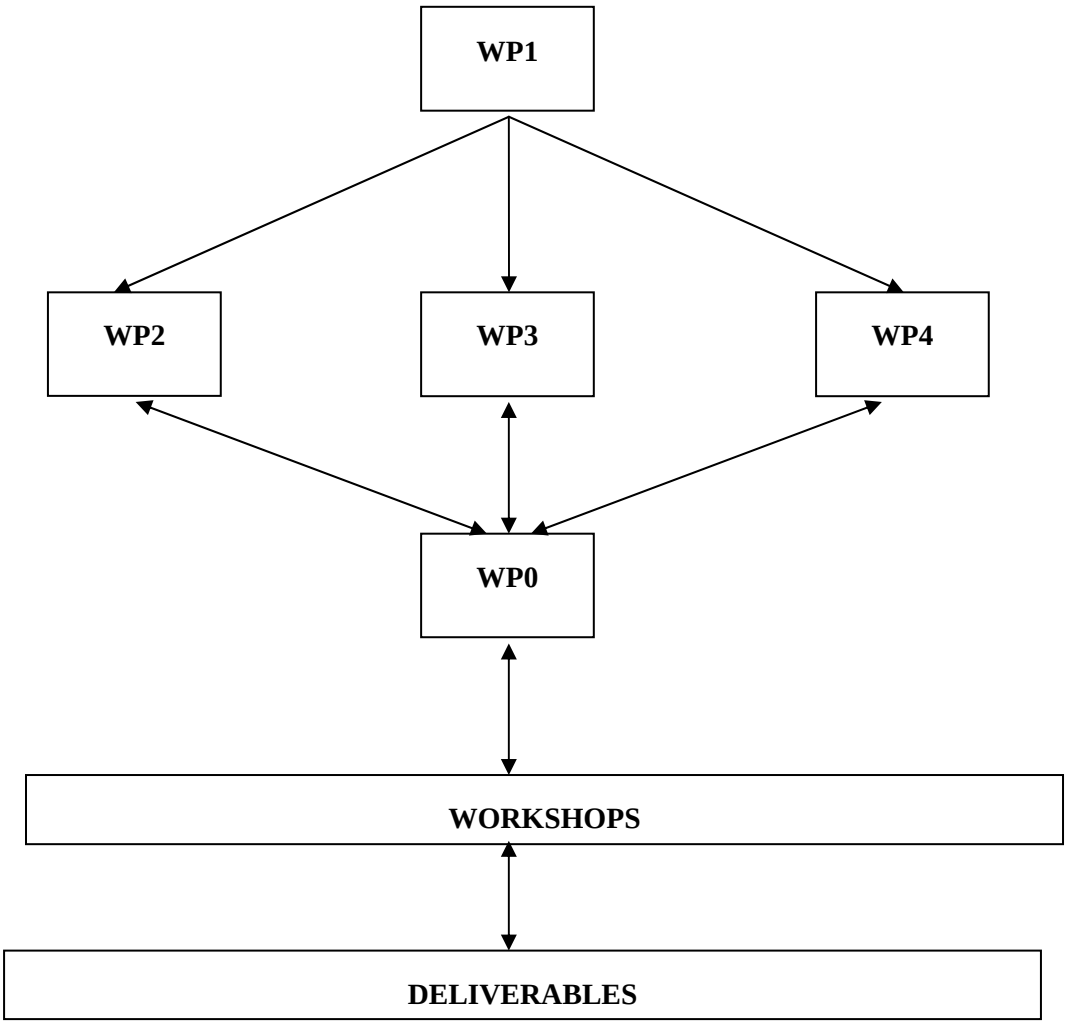
An important part of this work package will be to test the formulation of research issues, and preliminary research results, with stakeholders in the three world regions. This is a process designed to increase the impact of research. As such we will take the qualitative understandings generated by our research and discuss how far we might progress in future towards assessment tools.

One particular and policy sensitive issue will be explored de novo in these stakeholder exchanges. This starts with the observation that research programmes as themselves distributors as well as creators of technical capacities in the forms of human resources, infrastructure, and intellectual property rights. It will explore how the understanding generated by other work packages, especially WP2 and WP3, will help us to analyse the structural, distributional and representational inequalities embodied in these programmes. It aims at producing a framework for the assessment of research programmes in this respect as well as with respect to the effects of such programmes on the building of research and innovations capacities and the distributional effects of policy programs. A research funders' workshop organised around a major analytical/prospective paper produced under this study will test the potential scope for real time assessment of the distributional consequences of research programmes and their possible remedies. The workshop will also be asked to consider FP7 as a research site for assessment of new experimental approaches to securing balance between the creation and equitable distribution of technological capacities.

7.2 Work planning and timetable

Please see the graphical representation in the separate annex to this DoW.

7.3 Graphical presentation of workpackages



7.4 Work package list/overview

Effort in person-months – full duration of project

(bracketed contributions are those to which the Commission is not requested to contribute)

	WP1	WP2	WP3	WP4	WP0	Man	*Total*
Participant	**Policy Dimensions of the Global Knowledge Economy**	**Policy Tensions in Relation to the Pursuit of Equality**	**Articulating New Accountability Systems**	**Distributional Assessment of Emerging Technologies**	**Policy Evaluation and Application**	**Project Managment**	
1. Oxford	**1**	**1**	**25 (+1)**	**1**	**14 (+2)**	**10.8**	**52.8 (+3)**
2. Leeds	**4**	**10 + (1)**	**0**	**0**	**2 (+2)**	**0**	**16(+3)**
3. NIFU STEP	**4**	**0**	**2.3**	**7**	**2**	**0**	**15.3**
4. Amsterdam	**0**	**0**	**2**	**0**	**2**	**0**	**4**
5. CES	**0**	**0**	**31**	**0**	**6**	**0**	**37**
6. Malta	**4**	**0**	**0**	**7**	**3**	**0**	**14**
7. METUTECH	**0**	**4**	**0**	**0**	**1**	**0**	**5**
8. Eduardo Mondlane	**0**	**0**	**0**	**2**	**6**	**0**	**8**
9. Stellenbosch	**0**	**10**	**0**	**0**	**2**	**0**	**12**
10. ISI/FhG	**0**	**5**	**0**	**2**	**2**	**0**	**9**
11. GTRC, Georgia Tech	**(2)**	**0**	**0**	**(16)**	**(1.5)**	**0**	**(19.5)**
Full Effort in Person-Months	**15**	**31**	**61.3**	**35**	**45.5**	**10.8**	**198.6**
Of which the Commission contributing to:	**13**	**30**	**60.3**	**19**	**40**	**10.8**	**173.1**

7.5 Deliverables list (full duration of project)

Work package leaders are responsible for each deliverable emanating from their work package

Deliverable No[11]	Deliverable Title	Work Package	Delivery dates	Nature	Dissemination Level
0	Initial conference/workshop to situate ResIST research and plan our usage of methods and concepts. *Through work package leaders*	*All*	Month 4	R	**PU/RE**
1	Preliminary position paper as input to stakeholder dialogue	*WP1*	Month 4	R	**RE**
2	Paper on policy dimensions of the global knowledge economy	*WP1*	Month 12	R	**PU**
3	Journal article summarising results	*WP1*	Month 24	R	**PU**
4	Framework Papers on Regional Contexts	*WP2*	Month 9	R	**PU**
5-8	Four national reports	*WP2*	Month 11	R	**RE**
9-12	Thematic papers drawing on national report and empirical work in the WP2 partner countries	*WP2*	Month 28	R	**PU**
13-16	Three short policy-oriented reports	*WP2*	Month 28	R	**RE**
17	Integrated framework for analysis of accountability systems from the point of view of their implications for redistribution and capacity building	*WP3*	Month 24	R	**PU**
18	Case studies of innovative experiments of accountability	*WP3*	Month 18	R	**RE**
19	Case studies of implications and impacts of mundane technologies	*WP3*	Month 18	R	**RE**
20	Two reports for policy audiences	*WP3*	Month 28	R	**PU**
21	Qualitative model of the impacts of new technologies on the poor, in different national contexts.	*WP4*	Month 12	R	
22-23	Two workshops planning and integrating the case studies	*WP4*	Month 28	O	**RE**
24-26	Journal article, policy paper and proposal for an edited book	*WP4*	Month 34	R	**PU**
27-28	Papers for discussion with policy audiences, through WP0, in the early and late stages of the project	*WP4*	Month 6 Month 30	R	**RE**
29-31	Three world regional workshops, in Europe, the Caribbean/Latin America and Southern Africa	*WP0*	Months 6-9	O	**RE**
32	Framework on structural, representational and distributional inequalities in S&T capacity building	*WP0*	Month 12	R	**PU**
33	First review report	*WP0*	Month 20	R	**PU**
34	Second review report	*WP0*	Month 28	R	**PU**
35-36	Two policy papers	*WP0*	Month 28	R	**RE**
37-39	Three world regional workshops	*WP0*	Months 30 -34	O	**RE**
40	**Final Report** through work package leaders	*All*	**Month 36**	**R**	**PU**

7.6 Work Package Descriptions

Work Package 0

Policy Evaluation and Application: Promoting Balanced Growth within the European Research Area and between the ERA and Developing States and Regions

Work package leaders: Peter Healey (UOXF.MQ) and Lídia Brito (UEM). Work package leaders in bold. Person-months at no cost to the Commission in italics.

Work package number	0	**Start date or starting event:** Month 1				
Participant id	**UOXF. MQ: PH**	**UOXF. MQ: SR**	**UOXF. MQ: SW**	UNIV LEEDS: LA	UNIV LEEDS: BG	NIFU STEP: EK/AK
Person-months per participant:	**14**	***1***	***1***	*2*	2	2
Participant id	UvA: RH	CES: JN	CES: TP	UoM: JH	UoM: N Z-A	METU TECH: SE
Person-months per participant:	2	2	4	1.5	1.5	1
Participant id	**UEM: LB**	SU: JM	FhG/ISI: US		GTRC: SC	
Person-months per participant:	**6**	2	*2*		*1.5*	

Work Package total person-months **45.5 ,** of which the Commission contributing to **40**

Objectives

Following the Project central policy concerns, a specific objective of the Project, running horizontally through all its activities, will be to maintain a continued and developing dialogue with those responsible for policy and practice in sets of countries which exemplify different forms of inequality in S&T. This activity will run throughout the project and, in order to maintain focus on the project aims, this team involves leaders of the different activities. The objective will be both to learn from policy-makers on their own decision-making processes, as well as to actively disseminate the ongoing results of the project and better focus the following phases. In this context the Project will develop the putative framework on structural, representational and distributional inequalities in S&T capacity building; act as a space for interrogation of and dialogue with the ongoing work with the aim of retaining focus on the overall objectives of the project to facilitate policy and practice which can support balanced growth; establish effective links with policy and practice in the three selected representative geoeconomic areas – Europe, Sub-Saharan African and Latin America/Caribbean – as a basis for sustained mutual learning on issues, mechanisms and models, and the means of embedding change in policy and practice. This will be achieved through the regular Workshops organized within each of the five other Workpackages of the project, plus two sets of three general Project Conferences each to be held during the earlier and final periods of the Project. Each Workshop will include a session with local policy-makers and stakeholder representatives. Local participants will be invited as well to the general project conferences.

Description of work

This Workpackage will run through the entire duration of the project, cross-cutting the other WPs. It consists of three main tasks:

(a) Develop the conceptual framework on structural, representational and distributional inequalities in S&T capacity building

Led by Susan Cozzens (TPAC, GTRC) with a major contribution from Peter Healey (UOXF.MQ) and further contributions from Egil Kallerud (NIFU STEP), Rob Hagendijk (UvA) , Johann Mouton (SU), Steve Rayner (UOXF.MQ) and João Nunes (CES).

(b) Act as a space for interrogation of and dialogue with the work of the five work packages with the aim of retaining focus on the overall objectives of the project to facilitate policy and practice which can support balanced growth.

While the previous task integrates conceptually the work developed in the different WPs, this task will integrate the policy concerns and objectives of the different WPs of the project; it will be based mostly on the implementation of three Workshops. These workshops have two main objectives:
- discussing the common conceptual focus, based on work on Task a) of this WP;
- defining common agenda and main policy questions, and integrating research results of the different WPs.

(c) Establish effective links with policy and practice in the four selected representative geoeconomic areas as a basis for sustained mutual learning on issues, mechanisms and models, and the means of embedding change in policy and practice.

The representative geoeconomic areas we shall work on are:

1. Europe
    1.1. Core countries (United Kingdom, The Netherlands, Norway)
    1.2. Peripheral Europe (Portugal, Malta, Poland)
    1.3. Candidate States for EU (Turkey)
2. Sub-Saharan Africa (Mozambique and South Africa)
3. Latin America and Caribbean (Brazil and English-speaking Caribbean country)

In this task we will assess the main policy challenges, on the basis of the established links with policy and practice in the four areas. Within each area (with the exception of the United States), project conferences will be held at the earlier and final stages of the project (Months 3-6 and Months 28-30). All conferences will include as participants all the team members, as well as local participants to be invited among policy-makers and stakeholders. A specific session on local policy challenges will be held as part of each conference.

This specific task will also take achievements from the regular Workshops organized within each of the five other Work packages of the project, since each Workshop will include a session with local policy-makers and stakeholder representatives. The links between research and policy will be a particular focus throughout the project.

The central policy recommendations and future agenda to address inequalities through S&T will be the main outcomes of this work package. It will also enhance impact of the whole ResIST effort through this integrative work and through establishing effective links with policy and practice in the three world regions as a basis for sustained mutual learning on issues, mechanisms and models, and the means of embedding change in policy and practice.

- the testing of the research agenda with those most likely to be affected by the intended outcomes of the research ;
- an engagement with the research of a range of stakeholders;

- mobilising local knowledge sources;
- access to local research sites and examples of innovative, socially inclusive, practice;
- opportunities for comparative research;
- early testing out of research results;
- exploration of alternative policy framings in realistic settings;
- early adoption and social embedding of useful insights and results of the research.

Deliverables

- Framework on structural, representational and distributional inequalities in S&T capacity building
- Three Workshops integrating the research of the different WPs and Agenda building at the beginning of the project and to review results near the end
- Two Review Reports – Interim review of common agenda and results; final review of results and recommendations
- One policy paper reviewing the main policy challenges, on the basis of the established links with policy and practice in the four representative geoeconomic areas, and presenting the central policy recommendations and future agenda for addressing inequalities through S&T
- A second policy paper, to be discussed at the second set on world regional workshops, on the opportunities and challenges to develop and implement policy tools for the assessment of the distributional effects of major research programmes, including those to be pursued under FP7
- The integration of the final report

Milestones and expected result

- Months 6-9: Three project workshops (one in each representative area)
- Month 12: Framework on structural, representational and distributional inequalities in S&T capacity building
- Month 20: Review report 1
- Months 28-30: Three project workshops (one in each representative area) assessing drafts of the second review report and the two policy papers
- Month 34: Two Policy papers and second review report
- Month 36: Final report

Work Package 1
Policy Dimensions of the Global Knowledge Economy

Work Package leaders: Egil Kallerud (NIFU STEP) and Susan Cozzens (TPAC, GTRC)

Workpackage number	1		**Start date or starting event:** Month 1			
Participant id	UOXF. MQ :PH	UNIV LEEDS: BG	**NIFU STEP: EK**	UoM: JCH	UoM: NZA	***GTRC: SC***
Person-months per participant:	1	4	**4**	2	2	***2***

Total person-months **15** of which the Commission contributing to **13**

Objective:

Work package 1 provides a conceptual overview for the project to work with in its early stages and follows through with the framework, revising and updating in response to results and workshop discussions.

It will provide a conceptual framework for describing how policy contexts for key S&T processes affect the production, distribution, and redistribution of knowledge resources; and for articulating the scope for alternative framings and policies. Seeing that increasing inequalities are at the heart of global policy challenges, there is a need to consider S&T processes within their wider contexts, relating the processes of distribution and redistribution of knowledge resources and benefits to different policy dimensions, to enhance understanding of reinforcing mechanisms between different policy mechanisms, their emphasis on growth vs. inequalities, as well as the importance of the role of more and less developed countries in their making. Policies for S&T are increasingly framed in terms of policies to promote and adapt to the Knowledge Economy, emphasizing the increasing centrality of science and technology as sources and determinants of competitiveness, growth and development. In this view, the distribution and ownership of knowledge play a dominant role in success in the current global economy. Individuals, organizations, and societies that know how to appropriate and exploit knowledge are those that gather wealth. Consequently, access to and control of knowledge is a fundamental factor in the production and reproduction of wealth, and hence an increasingly determinant of inequalities, both within Europe and between Europe and the developing world. The main objective of this WP is to provide an overview of key policy issues, actors and actions, as well as a core vocabulary and conceptual framework to be used throughout the project.

Description of work

(1) Policies for the knowledge economy

The very concepts of Knowledge Economy and Knowledge Society will be re-examined for their adequacy to describe economies and societies beyond the North in the light of this exploration. Who makes the crucial decisions in the knowledge economy? Do those decisions have the effect of further concentrating knowledge resources or of spreading them more broadly? To what extent, and how, are dimensions and issues of inequality addressed in these frames and policies?

(a) *The concept of the knowledge economy*
We will initially produce a critical review of the concept of the "knowledge economy", in terms of its capacity to provide and adequate framework for developing policies that may effectively address key issues of inequality and development from the point of view of less advantaged groups and regions. What is meant by knowledge? What roles is it thought to play in the economy? To what extent do both developed and developing nations buy into the concept?

(b) *Main issues, policy actor and actions*
At a second step, we will identify key issues, actors and actions of S&T policies that affect in particular issues of development and inequality (research and innovation, human resources, regulatory policies). Among the key concepts and issues that will be discussed in particular are: differential access to knowledge by women and historically disadvantaged populations; social/institutional capacity, (technology) transfer, FDI etc.

Main responsibility: TPAC, GTRC
Contributions: NIFU STEP

(2) Inequalities in the Knowledge Economy

Here we will outline:

(a) the different form of inequality that will be considered in the project (between genders, social groups, countries and regions, within Europe and globally), and

(b) how knowledge figure in each form of inequality

Main responsibility: University of Leeds
Contributions: NIFU STEP and University of Malta

(3) Inequalities in S&T policies – national, European, global contexts

To provide an analytical map of decision-making in the knowledge economy, we will identify the range of *national* policies and programmes that shape knowledge-producing, -distributive and –absorptive capacity. In the same terms it will analyse *European* and *global* contexts including the Bretton Woods Institutions, and the United Nations and its agencies. It will also analyse the fast-changing philanthropic scene. The results will be used to frame more detailed analysis of specific distributive and accountability mechanisms in subsequent work packages, but written up as an exploration of the inbuilt distributive assumptions and practices of these global framing institutions it should also make a considerable contribution to current debate about their purposes and functioning:

(a) National contexts for knowledge production and distribution

To assess of *national* capacities and issues in the policy dimensions outlined under, the team will draw on existing policy literature to describe the range of national policies and programs that shape the national and international flow of knowledge and knowledge-producing capacity. On the production and distribution side, these include research and development policies, intellectual property provisions, and education and training policies (for which this task will draw on findings under WP2). Programmes aimed at developing institutional capacity in disadvantaged communities will be included. The tension between spreading capacity and maintaining excellence will enter the analysis. Also included are such issues as the press as a communication channel, access to expertise in S&T-based controversies and the regulatory process, and security restrictions on sharing information. Both developed and developing countries will be treated in the analysis, drawing attention to differences.

UK: Oxford
Malta: University of Malta
Norway: NIFU STEP
US: TPAC GTRC

These country studies will form models for similar short portraits to be written by the other members of the teams for their countries.

Synthesis: NIFU STEP and TPAC GTRC

(b) The European context; the European Research Area

This section focuses on the role of the European Union in shaping the contexts within which R&D policies are formulated and implemented. This component of WP1 will:

- *identify and explore the diverging concepts of equality embodied within EU law and policy*. As a fundamental principle of European Law, equality plays an important interpretative function. The work will – map the concept of equality in European law (and in the Treaty provisions in the first instance). It will then develop specific areas (such as regional equality and gender equality, for example) to show how these principles have developed and how they have shaped policy.

- *identify examples of policy externalities generated by pre-existing R&D policies which potentially generate or exacerbate inequalities.*

Policies not only respond to perceived inequalities (above) but also generate, often unwittingly, new forms of inequality. This section will identify some key examples of such policy externalities to illustrate the policy dynamic. One example which will be developed in the empirical component of WP2 concerns the tensions between individual equity and regional inequality.

- i*dentify and promote an equality consciousness as a guide to policy developments and initiatives capable of supporting a more effective synergy between the commitment to equality and raising living standards on the one hand and a competitive and excellent R& D policy on the other*

In this section, we will consider the merits and potential that approaches to equality audit or impact assessment might contribute to the reduction of policy externalities and the promotion of a more ethical and egalitarian R&D policy at EU level.

In response to reviewer comment, we will under this WP *not* undertake a specific analysis of EU programmes (FP6 in particular) to examine their role in generating a 'structuring' effect encouraging good practice.

University of Leeds

(c) *Global contexts.*
Under this task, the team will examine the role of international organizations and institutions in shaping the global flow of knowledge and knowledge-producing capacity. Included will be the World Bank, International Monetary Fund, regional development banks, World Trade Organization, United Nations, international development agencies, and major philanthropic organizations. Drawing on existing literature, the work under this task will focus on identifying what is known about the distributional impacts of programs and policies such as international research efforts, capacity-building programs, and intellectual property regimes. Most of these are areas of lively public debate. An analysis of that debate will help identify the scope for alternative policy options.

Specific issues:

(ci) Intellectual property rights (WTO, WIPO).
The global regime for IP is receiving considerable attention as a legal framework for knowledge production and distribution. How does it affect the various forms of inequality outlined earlier? What is the global IPR agenda, and to what extent and how do issues of development and inequality shape that agenda?
NIFU STEP

(cii) International institutions
An analysis of policies of a number of institutions in terms of shared commitment to reducing inequality between nations in standard of living and to fighting world poverty, including:
- World Bank
- UN agencies
- International NGOs : foundations and activist groups

Main responsibility: TPAC, GTRC
Contributions: University of Malta

(4) Synthesis
(a) Discussion and conclusion
Conclusions of the discussions as outlined above will be drawn in terms of who the key decision-makers with regard to the project issues, and how they may take the various forms and issues of inequality that are discussed into account. The paper will be written as a *policy* paper, to be used in the policy dialogue in WP0, but will subsequently be condensed and re-written as an article for publication in a relevant journal.

(b) Process, reporting.
Work on the draft policy will begin as soon as the award is announced, so that the products can be circulated within the WP team and the whole group before the first regional workshops. The paper will be in draft form at that time, but will be expanded and revised in response to the regional workshop discussions. The team leaders are responsible for the iterative process of expanding/revising the paper, and feed the results of these revisions back into other work in the project.

TPAC, GTRC and NIFU STEP

Deliverables

1. Position report papers as contributions to stakeholder dialogue under WP0
2. Policy paper
3. Summary journal article.

Milestones and expected results

- Months 4: Preliminary position paper
- Month 12: Synthetic policy paper
- Month 24: Summary journal article
- Months 28-30: Contribution to across team synthesis and stakeholder engagement in world regional meetings under WP0

Workpackage 2

Policy Tensions in Relation to the Pursuit of Equality: Promoting Scientific Mobility and Balanced Growth

Work package leaders: Louise Ackers (UNIVLEEDS) and Johann Mouton (SU)

Workpackage number	2	**Start date or starting event:**	Month 4
Workpackage title Policy Tensions in Relation to the Pursuit of Equality: Promoting Scientific Mobility and Balanced Growth			

Participant id	UOXF. MQ: PH	***UNIV LEEDS: LA***	**UNIV LEEDS: BG**	METU-TECH: IS	METU-TECH: SE
Person-months per participant**:**	1	***1***	**10**	2	2
Participant id	**SU: JM**	**SU: F T-Z**	**SU: NB**	FhG/ISI: SB	FhG/ISI: US
Person-months per participant:	**2**	**3**	**5**	4	1

Total person-months **31** of which the Commission contributing to **30**

Objectives

The Mobility of Third Country Scientists; A New Dimension

The studies outlined above have mainly focused on the situation and experiences of mobile EU nationals and on the policy and resource framework shaping their migration and career decision-making. The current proposal builds on this work and expertise. In particular it shifts the focus onto the situation of scientists working in or seeking to work in the EU who are third country nationals.

It seeks to examine the impact of this kind of scientific mobility on the individuals and regions concerned both in terms of individual equity and regional or territorial equality. In order to achieve this it will address a number of research questions:

Key Research Questions:

- The dimensions and geography of scientific flows in the four partner countries
- The quality or characteristics of flows (who is moving and at what stages in their career trajectories), where 'investments' are made and skills generated (and who underwrites the costs)
- The quality and location of any 'expenditures'; whether skills are exercised effectively in sending and receiving countries and following return (re-integration).
- The migration trajectories of scientific migrants including the frequency, permanence and location of moves, the issues of retention (and 'settlement') and the propensity to 'return'
- Whether mobility from outside the EU has different stimulants to intra-EU moves
- The form barriers to mobility take for third country nationals
- The effect of life-course, partnering and parenting on mobility and the (gendered) effects of this on the demographic and social balance of scientific labour markets in sending and receiving regions.
- The extent to which international migration spawns other forms of knowledge generation and transfer which are not directly related to physical presence, such as diasporic networks and more specific forms of scientific exchange.
- The extent to which individual countries, and the EU, is reliant on attracting third country researchers to meet skills shortages
- The extent to which sending countries in the developing world benefit or lose from the mobility of researchers

The Geographical Scope of the Study

In order to promote a fully contextualized and comprehensive analysis of the processes outlined above, the research in this work package focuses on two case studies in EU ***Receiving Regions*** (the UK and Germany) and two case studies in ***Sending Regions (***Turkey and South Africa).

Description of work

Task1. Policy analysis and literature review at EU and national level.

The MOBEX2 study is currently developing work on the legal and policy context in terms of the free movement rights of EU nationals and transition arrangements in the new Member States. This work package will build on this work to consider policy and practice both at EU level and also in the case study countries in relation to entry and admission rights and associated social security and fiscal issues (for both the individual scientists and his or her family). It will pay particular attention to plans to introduce a 'scientific visa' as a means of overcoming existing barriers to mobility. Task 1 will also consider the implications of the third tier of the Bologna process in terms of harmonization of doctoral training and mutual recognition of qualifications.

The team will generate a 'template', providing a clear structure for detailed and comparable country reports in the four case study countries. The template will request information on:

- *Science Strategy and the economy: expenditure on R&D; facilities; regional science strategy; concentration of scientific resources/infrastructures; industry-university links*
- *HE Systems: profiles of student and staff at universities (gender, level and discipline); funding systems; mobility.*
- *Science Labour Markets and Careers: skills shortages/surpluses; mechanisms for recruitment/retention & progression; contractual status; working conditions and hours; salaries; facilities; representation of women and different nationality groups and policy initiatives in these areas; importance of international experience/mobility.*

Statistical and documentary analysis will be supported by targeted *key informant interviews* with policy-makers and experts (n=5 per country) to identify relevant sources. WP0 will help us identify these.

Task 2. Mapping Flows into the EU

This phase of the research will involve a mapping exercise to gain an impression of the volume and geography of flows of R&D personnel to and from the target countries (including return). In order to capture dimensions not only of scientific excellence but also potential it will include within its remit, flows from under-graduate through to senior researcher level. Building on our experience in MOBEX2 we will use existing contacts and data bases in Germany and the UK to track third country scientists. The partners in South Africa and Turkey will identify relevant databases in their countries to gain some indication of out-flows and returns.

Task 3. Understanding scientific migration and location decision-making

Task 3 will involve the development of an on-line questionnaire. This will target:

- scientists who have applied for a European researchers visa based at home or abroad
- scientists who moved to the host countries under pre-existing arrangements
- returnees to home country

The questionnaire will be structured to minimise the need for translation and ease coding and will include question areas on: background/personal data, migration histories and decision-making including location decisions, education and employment trajectories and future plans. The issue of sample size will be resolved once we have more information on the population. We would aim to achieve as large a sample as possible (at least n=100 per country) This work will take place in all partner countries. The instruments will be developed in Leeds and discussed at team meeting prior to their piloting first in the UK and then in partner countries. Partners will be responsible for ensuring the returns for their region. The results will be analysed in Leeds using SPSS.

Task 4. Qualitative interviews with mobile scientists

On the basis of questionnaire data we will select a sub-sample for follow-up qualitative work in the *sending and receiving countries* (20 South Africans/Turkish scientists in the UK and Germany and 20 leavers/returnees in South Africa and Turkey). Sample selection will take into account variables such as nationality/country of origin, family status and gender, level (undergraduate, post-graduate, post-doctoral and experienced researchers), employment status and discipline. The interview schedule will take account of the different sample and focus on the experience of mobility and the conditions under which it takes place both before and after the researchers visa comes into effect. Interviews will explore education/career and migration/ location decision-making and trajectories and the impact of partnering/parenting on these. Four versions of the schedule will be developed by the team and piloted in all partner countries. The material will be analysed using the systems developed in MOBEX and IMPAFEL (combining SPSSx and Nud*Ist6).

Task 5. Synthesis and reporting

This task will run through the work package and ensure contributions to reports and publications in this and other work packages.

Deliverables

1. Two Framework Papers on the World Regional Context - UK in Enlarging EU and SA in African context (Month 9)

2. Four National Reports – UK, South Africa, Turkey, Germany (Month 11)

3. Four Thematic papers drawing on the national reports and the empirical work in the partner countries (Month 28). Suggested topics include:

5. *Opening access to employment in the European Union for Third Country Researchers*
6. *Understanding scientific migration and location decision-making*
7. *Employment as a Scarce Resource: Issues of Individual Equity in Science Careers*
8. *The relationship between human mobility and the transfer of knowledge/capacity building*

4. Production of Three Short Policy Oriented Reports

The team will prepare three short accessible 'findings sheets' based on thematic papers but focused mainly on policy implications and the exchange of good practice. They will be translated into the languages of the partner countries (Month 28) .

Milestones and expected results

- Month 9: Framework Papers on World Regional Contexts
- Month 11: Four national reports
- Month 28: Four thematic papers drawing on the national reports and the empirical work in the partner countries
- Month 24: Production of three short policy oriented reports
- Months 28-30: Contribution to across team synthesis and stakeholder engagement in world regional meetings under WP0

Work Package 3

Articulating New Accountability Systems

Work Package leaders: João Nunes (CES) and Steve Woolgar (UOXF.MQ)

Workpackage number	3	**Start date or starting event:**				Month 4		
Workpackage title Articulating new accountability systems								
Participant id	UOXF. MQ: PH	**UOXF. MQ: SW**	UOXF. MQ: DN/ Post-doc	NIFU STEP: EK	UvA: RH	**CES: JN**	**CES: MM**	**CES: Res.Ass**
Person-months per participant:	4	***1***	21	2.3	2	**4**	**9**	**18**

Total person-months **61.3** of which the Commission contributing to **60.3**

Objectives

The main objective of this workpackage is to identify and analyse the emergence and workings of accountability systems that provide for the explicit stating and framing of distributional issues related to the design, development and social appropriation of scientific and technological resources. Systems of accountability are the means by which the potential distributional consequences of science and policy and practices can be recognised and assessed – and potentially incorporated – by formal elements of the political system. Accountability systems attuned to the needs of the disadvantaged are thus the prerequisite for reorienting scientific governance towards greater social inclusion in building S&T priorities and in distributing its products. Because accountability systems embody a whole range of normative assumptions about the purposes and uses of S&T, the boundary between such alternative systems and those of conventional policy and practice is an important site of contestation in scientific governance, and one in which any reconfiguring of interests will take place.

The work package will examine the construction of such alternative accountability systems in two very different contexts.

The first involves experimental initiatives of a variety of kinds in S&T capacity building and priority setting with the aim of remediating inequality. Some of these will be top down – such as the current attempts to persuade the World Health Organisation of the value of new coalitions of public and private interests in the production and delivery of vaccines for the poor – but the majority will be 'bottom-up', addressing our concerns to improve the representation of the disadvantage in the design and implementation of technical change and to allow for the emergence of groups or collectives that are affected by S&T developments. It is often the case that these initiatives are evaluated for their contribution for improving knowledge for decision-making and/or for their role in legitimating decision-making by formal bodies and institutions. We will rather focus in this workpackage on two other issues associated with these initiatives and experiments: how they contribute to redistributive outcomes that are considered as more fair and just and how they contribute to the empowerment of social actors through processes of democratic debate and deliberation.

The second context refers to the redistributional issues associated with the design, development, access to and use of mundane, everyday technologies. Developments in science and technology play a crucial role in shaping people's access to resources, possibilities for mobility and opportunities for employment. Often, the uneven distribution of such forms of access, mobility and opportunity has consequences for people's health and well being. Yet too often science and technology are assumed to be the exclusive reserve of hi-tech, cutting edge developments operating on a global scale. What these assumptions neglect is, firstly, the multitude of ways in which such developments can shape, organise

and influence pervasive and mundane, day to day existence. Cutting edge technology plays a far smaller role in day to day existence than technologies taken for granted by many in the developed world. Secondly, assumptions of global scale neglect that technologies often shift between a wide variety of locales, with the same technology raising very different questions for different contexts. In place of an abstract sense of globalisation, what we find is many local, specific and difficult issues linked together by technology. For example, clothing is often a focus for concern at production sites in the developing world, then forms a focus for international shipping, is then appropriated in the developed consumerist world, before being shipped back to the developing world by charitable organisations, where it again forms a focus for concern regarding control, access and distribution. Taking the connectivity of mobilised technology as a focus, three case studies will be developed in order to answer the following questions: How can we develop an understanding of the mundane and pervasive ways in which science and technology developments shape the organisation of life in a variety of locales? How can we develop an understanding of the interconnected and multiple locales through which technologies move? What methods do we have available for developing appropriate policy for such interconnected locales? What would constitute appropriate mechanisms for holding so many policy locales to account? How could accountability mechanisms be developed for the benefit of those in specific locales? What methods of assessment need to be developed for considering such benefits and beneficiaries?

Examining the values and processes which inform accountability in these contexts will help give them a common framing and provide a deeper understanding of their successes and failures in securing wider embedding in policy and practice.

This work package will produce outputs for a variety of bodies and actors. However, rather than simply produce reports, outlining results, to be sent to these groups, the researchers will initiate on-going engagement with these contexts of application. Through such engagement the researchers will actively communicate and gain feedback on the results of the research as they are produced. This will enable the final reports to be the product of on-going collaboration which can draw on and recognise the expertise of the groups below while also fostering learning opportunities for all parties involved.

Description of work

This work package will pursue three tasks. The first consists of the elaboration of an integrated framework for analysing and evaluating experiences with innovative approaches to accountability, taking into account the twin issues of redistribution and capacity building. A preliminary version of this document will be prepared during months 1 to 6 of this work package, to be used as a set of general guidelines for the final selection and work on the case studies. During the last six months of the work package, this preliminary version will be revised taking into account the case studies and will be given final form.

The two other tasks will be pursued in parallel during months 7-18. They consist of the case studies and include the following:

- One of the tasks examines innovative approaches to the remediation of inequalities and to capacity building, covering areas such as health policy and delivery, agriculture and environmental issues, information and communication technologies, urban planning or energy policies, at international, national, regional and local levels. This part of the work package would review and provide a common framing for a variety of mechanisms, including:
    - Councils and other forms of heterogeneous forum involving citizens and stakeholders, for the definition of policy agendas and their assessment and monitoring in areas such as the environment, public health, healthcare delivery, information technologies, energy and urban planning;

- Coalitions of interest and resources promoting the recognition of problems or actors ignored or marginalized by dominant orientations of health policy and aiming at particular health outcomes not being delivered by the market;
- Forms of collaborative research involving scientists and experts and citizens and their organizations, such as science shops and other forms of community-based research and specific collaborations between patient organizations and biomedical researchers;
- Local initiatives in agenda building for research and technological development, and budget allocation. These will include experiences of participatory budgeting, especially in relation with redistributive issues associated with urban planning and management.
- Initiatives for the involvement and empowerment of citizens for public debate and participation in deliberative fora, such as citizen juries and panels and participatory theatre, among others.

Cases would be drawn on from France, Portugal, the Netherlands, Brazil, the Basque country, Flanders, India and Bolivia, amongst others. The case studies will be selected on the basis of three sets of criteria: first, diversity of geographical context, covering societies in both North and South, Europe and INCO countries; secondly, diversity of themes and of actors involved; and, thirdly, density and exemplarity of the cases, in terms of the issues of interest to this work package. The methodology will be based on the extended case method, combining a range of techniques including literature reviews, documentary analysis, interviews, field observations and focus groups. Specific combinations of techniques will be defined for each case study, taking into account setting and specificity.

- The other task examines the redistributional issues surrounding mundane, everyday technologies, taking into account the wider implications and impacts of recycling technology. These case studies will address:
  - *Textile lifecycles*. Clothing, such as t-shirts, forms a ubiquitous aspect of consumer lifestyles in the developed world. However, often t-shirts are produced in developing countries, where questions are asked of labour conditions, safety and hours of work. Subsequent to use in the west, t-shirts are often donated to charities and shipped back to the developing world where they form the focus of emerging industries for accessing, distributing and owning such garments. How could these contexts of production, shipping, usage, shipping (again), re-distribution and usage (again) be connected through policy developments? Could a system of accountability be developed for encouraging the connectivity of these locales to be constituted in such a way as to be advantageous to the developing world?
  - *Vaccines*. Vaccines can form a pervasive, mundane and routine expectation within societies of the developed world (aside from questions of the reliability of MMR and questions of the availability of flu vaccines). However, the absence of, and political controversies pertaining to, vaccines in the developing world require that many aspects of day to day routine are organised around attempts (and failures) to gain access to vaccines in appropriate settings, within appropriate time frames, for appropriate sections of a population. Much of this access and routine expectation derive from vaccine development and ownership by developed societies. How might these contexts of vaccination be drawn into a connected system of accountability? How might such a system be developed in order to enhance the health and well being of those in the developing world?
  - *E-waste*. With the growing use and disposal of IT equipment, questions are being

asked of where waste should go, how IT should be dismantled and what impacts such e-waste is having on particular locales. Currently it appears that the far-east provides the context for the development of IT, the western world provides the context for much IT use and the developing world (particularly India and Africa) provides the context for IT disposal. This case-study will ask: how can these contexts be drawn together through policy so that developers and users are also aware of, and perhaps more responsible for, disposal issues? What are the most appropriate ways for disposing of e-waste? Can we develop reliable mechanisms for holding to account developers, users and the contexts of disposal in order to enhance benefits of this connectivity of locales for those in the developing world?

Deliverables

17. Integrated framework for analysis of accountability systems from the point of view of their implications for redistribution and capacity building
18. Case studies of innovative experiments of accountability
19. Case studies of implications and impacts of mundane technologies
20. Two reports for policy audiences

Milestones and expected result

- Month 6: preliminary version of integrated framework
- Month 18: Reports of case studies
- Month 24: revised version of integrated framework
- Months 28-30: Contribution to across team synthesis and stakeholder engagement in world regional meetings under WP0

Work Package 4

Distributional Assessment of Emerging Technologies

Work Package leaders: Susan Cozzens (TPAC GTRC) and Mark Knell (NIFU STEP)

Work package number	4		**Start date:** Month 1

Participant id	UOXF. MQ: PH	**NIFU STEP: AK**	UoM: JCH	UoM: NZA	UEM: LB	FhG ISI: BB		**GTRC: SC**	**GTRC: Res asst**
Person-months per participant:	1	**7**	3.5	3.5	2	2		***2.5***	***13.5***

Total person-months **35** of which the Commission contributing to **19**

Objective: *Model the distributional impact of new research-based technologies, through dynamics such as decreased unemployment, reduced cost of basic goods, or increased effectiveness of public services.*

New technologies often lead to new industries, which inevitably disrupt existing patterns of trade and employment. There are winners and losers in these changes. According to one argument outlined in the main text, knowledge-holding individuals and societies are more likely to be winners and resource-based livelihoods and societies are likely to be losers.

This Work Package will develop tools for prospective assessment of the distributional effects of new technologies. Such effects may occur through at least three routes:

• *Employment and wages*. New technologies form the basis for new industries, whether the nation involved is producing or only consuming the technology. The mobile phone industry, for example, leads to production jobs in some countries and service jobs in others. Countries that focus on high-technology manufacturing (e.g., Germany, the United States) thus encourage the production of a relatively small number of very high-skill jobs in those industries. Countries that focus on low or medium-technology manufacturing (e.g., China, Korea) stimulate more mid-wage jobs. In both cases, the new jobs generate multiplier effects in the national economy. Rapidly-growing industrial sectors can dramatically reduce unemployment, as happened in Ireland in the 1990s. All these dynamics can have profound effects on income inequality and poverty.

• *Lowering costs of basic goods.* The typical price profile for new technologies starts high and drops. When the technology becomes mature enough to be available to a mass audience, it may increase quality of life broadly, as for example, the new technologies for control of blood sugar for diabetics. Innovation that reduces the costs of basic goods (as, for example, agricultural research has traditionally lowered the cost of food in urban markets in developing nations) improves quality of life for the poor.

• *Improving public services*. When new technologies allow benefits to rise or costs to fall in public service provision, they may also increase quality of life for the poor. For example, may hope that communications technologies will make education more accessible to rural populations. Telemedicine may likewise improve the level of expertise available to rural clinics.

Approach: This Work Package will develop case studies of the introduction of a set of key technologies in several national contexts to examine their effects in these three dimensions.

• The technologies are likely to be chosen from three "platform technology" areas identified as crucial for developing countries by Task Force Ten of the UN Millennium Development Project: biotechnology, information and communications technologies (ICTs), and nanotechnologies. The first

two will offer established cases to compare with the third area, where new technologies have only emerged recently.

• The countries involved will reflect the location and expertise of the team. Kallerud and Beckert will contribute case studies from established EU member states. Harper will contribute cases in the EU candidate states. Brito and Zarb-Adami will contribute cases from Sub-Saharan Africa. Under additional external funding[1], Cozzens and her team hope to contribute cases from the United States and Latin America.

Approach: This Work Package will develop case studies of the introduction of a set of key technologies in several national contexts to examine their effects in these three dimensions.

- The technologies are likely to be chosen from three "platform technology" areas identified as crucial for developing countries by Task Force Ten of the UN Millennium Development Project: biotechnology, information and communications technologies (ICTs), and nanotechnologies. The first two will offer established cases to compare with the third area, where new technologies have only emerged recently.
- The countries involved will reflect the location and expertise of the team. Beckert will contribute case studies from established EU member states. Harper will follow cases in the EU candidate states or Sub-Saharan Africa. Under additional external funding, Cozzens and her team will contribute cases from the United States and Latin America. This additional funding may also allow Cozzens to explore cases in Asia.

Description of work

This Work Package consists of five main tasks:

(a) Develop a typology of emerging technologies and national conditions. The team will begin with a literature review and initial workshop to generate hypotheses about distributional effects of technologies as they occur in different national circumstances. We will develop a matrix or matrices that in one dimension characterize emerging technologies in terms of their potential to reduce inequalities through employment, cost, or public services. The other dimension will characterize national conditions that may mediate these effects. The matrix or matrices will serve as a sampling frame for choice of case study technologies and countries. So, for example, we may choose in the end to study the introduction of a rice variety, mobile phones, and a nano-based energy technology in each of five countries, Germany, Turkey, Mozambique, the U.S., and Colombia. All team members will participate in this work, and the team leaders will also prepare the typology and hypotheses to submit for publication.

(b) Gather background documentation and identify data sources for analysis. The first step in developing the case studies will be to gather all the secondary sources and relevant data we can from the vantage point of our home institutions. Sources and data will be shared across teams with a shared-access web site, and discussed in periodic telephone conferences. In this phase of the project, for each technological case, we will produce a general introduction and a country introduction. A goal of this phase is to identify specific institutions within each national context to contact during field work, and the deliverable is a specific plan for field work. All team members are involved in case studies, as described later in this work plan.

(c) Field work/ interviews in case study sites. The team responsible for each case study will culminate its data gathering with interviews and data gathering in the country being studied. This stage will allow us to supplement quantitative sources on the variables of interest (such as

[1] That is, the NSF funding requested.

employment), data which we expect to be rare or non-existent in some of our cases, with qualitative reports from knowledgeable individuals in the various countries. Qualitative assessment should be enough to let us move forward in our understanding of the dynamic interaction between specific new technologies and national contexts. All team members are involved.

(d) Write-up and analysis. After field work, the teams will gather for an intensive workshop to analyze the results across cases and articulate at least the first approximation of a model that can be used prospectively to assess the distributional impacts of technologies. The team will write up each case study, and the Work Package leaders will produce a cross-cutting document to summarize findings systematically.

(e) Publication and Dissemination. We expect the project to produce papers for an edited volume with contributions from all participating institutions. WP0 will provide opportunities for discussion with policy makers, in the early, middle, and late stages of the project, and we will prepare a special version of the results oriented to this audience. We will also present results at relevant professional meetings, such as the meetings of the Globelics network and the European Association for the Study of Science and Technology (EASST).

Deliverables

21. Qualitative model of the impacts of new technologies on the poor, in different national contexts.
22-23. Two workshops planning and integrating the case studies.
24-26 Journal article, edited book proposal, and policy paper.
27-28 Papers for discussion with policy audiences, through Work Package 0, in the early and late stages of the project.

Milestones and expected results

- Months 1-6: Literature review, workshop to develop typology.
- Month 12: Typology ready to submit for publication. Detailed plan for field work and interviews substantially complete.
- Month 24: Field work and interviews substantially complete.
- Months 24 - 28: Case study write-ups to synthesize results
- Months 28-30: Contribution to across team synthesis and stakeholder engagement in world regional meetings under WP0
- Month 34: Policy paper completed; detailed edited volume proposal well underway.

8 Project resources

NOTE: 8.1, 8.2

Landscape format forms under this section are given in a separate accompanying document- Annex to section 8 - given Word's instability in mixing formats in the same document

8.3 Management level description of resources and budget

Of 11 partners in the ResIST project, 7 are budgeting on an additional cost basis, three (NIFU STEP, METUTECH and FhG/ISI) are budgeted on the full cost formula, and one - GTRC – is looking for funding to the US National Science Foundation.

All the AC institutions are putting in significant resources to the project in the shape of the time of established staff (indicated work package by work package), and in facilities and research resources not covered by the Commission's contribution to indirect costs. Indirect costs where calculated for other funding bodies typically range between 80-120% of direct costs.

In responding to the Commission's offer of a maximum level of funding for this project of €1.3m, considerable scrutiny has been given to the time budget of all of the work package components to build a budget from the bottom up. These are set out in detail below in person-months.

The proposed allocation of the budget for personnel therefore represents directly this person-month allocation, which in turn is linked closely to the assemblage of the requisite set of skills for each task component.

Travel and subsistence has likewise been allocated according to the individual responsibilities of the partners with one exception: subsistence (not travel) allocations for key invited participants to the European, Southern African and Latin American/Caribbean world regional workshops has been allocated to partners in the University of Amsterdam, the Eduardo Mondlane University and the CES/the University of Coimbra respectively.

The maximum time allocation has been taken for management by the coordinator and his who will be responsible for overall management and for the requisite reports to the Commission. An administrative assistant is budgeted 0.2 FTE as part of this management provision. This allocation are in line with the coordinator's experience of the demands of the job.

WP0 tasks: person-months

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	TOTAL
Oxford: Healey	1	4	2	2	2	3	14
Oxford: Rayner	0	0.75	0	0	0	0.25	1
Oxford: Woolgar	0	0.5	0	0.25	0	0.25	1
Leeds:Ackers	0.25	1	0	0.25	0	0.5	2
Leeds: Gill	0	1	0	0.25	0.25	0.5	2
NIFU STEP: Kallerud/Knell	0.25	1	0	0.25	0	0.5	2
UvA: Hagendijk	0.25	1.25	0	0	0	0.5	2
CES: Nunes	0.25	1	0	0.25	0.25	0.25	2
CES: Pereira	0.5	1.5	0.5	0.5	0.5	0.5	4
UoM: Harper	0	1	0	0	0.25	0.25	1.5
UoM: Zarb-Adami	0	1	0	0	0.25	0.25	1.5
METUTECH: Elci	0	0.75	0	0	0	0.25	1
UEM: Brito	0.5	2	0.25	0.25	0	3	6
SU: Mouton	0.5	1	0	0	0	0.5	2
FhG/ISI: Schmoch	0	0.75	0	0.75	0	0.5	2
TPAC/GTRC: Cozzens	0.5	0.75	0	0	0	0.25	1.5
TOTAL	4	19.25	2.75	4.75	3.5	11.25	45.5

Task 1: Framework paper on structural, representational & distributional in equalities in S&T capacity building
Task 2: Three world regional workshops for stakeholder engagement, agenda building and review of results
Task 3: Review reports in months 20 and 34 and regular policy briefings
Task 4: Policy paper on challenges
Task 5: Policy paper on potential tools
Task 6: Final report

WP1 tasks: person-months

Partner		Task 1	Task 2a	Task 2b	Task 2c	Task 3	TOTAL
Oxford:	Healey	0.25	0.25			0.5	1
Leeds	Gill	0.5		3		0.5	4
NIFU STEP	Kallerud	1.5	0.25		1.25	1	4
UoM	Zarb-Adami/Harper	0.5	0.5		2.5	0.5	4
TPAC/GTRC	Cozzens	0.5	0.25		0.75	0.5	2
TOTAL		3.25	1.25	3	4.5	3	15

Task 1: Section on: Inequality as an issue in policies for the knowledge economy
Task 2: Section on national, European and global policies
2a: National
2b: European
2c: Global
Task 3: Synthesis/revisions/updating papers

WP2 Tasks: person-months

partner	Task 1	Task 2	Task 3	Task 4	Task 5	TOTAL
Oxford: Healey	0.5	0	0	0	0.5	1
Leeds. Ackers	0.2	0.2	0.2	0.2	0.2	1
Leeds: Gill	1.5	2	2	3	1.5	10
Metutech: Sezal	0.5	1	0	0.25	0.25	2
Metutech: Elci	0.5	1	0	0.25	0.25	2
SU: Mouton	0.5	0.25	0.25	0.25	0.75	2
SU: Teng Zeng	0.5	0	2	0	0.5	3
SU: Boshoff	0	2	0.5	2	0.5	5
FhG/ISI: Bührer	0.5	0.5	1	1	1	4
FhG/ISI: Schmoch	0.5	0.5				1
TOTAL:	5.2	7.45	5.95	6.95	5.45	31

Task 1 Policy analysis and literature review at EU and national level
Task 2 Mapping flows into the EU
Task 3 Understanding scientific migration and location decision-making
Task 4 Qualitative interviews with mobile scientists
Task 5 Synthesis and reporting

WP3 tasks: person-months

partners	Coord/pubs	Lit review	Wkshop 1	Prepare cases	Wkshop2	Fieldwork case	Write case	Wkshop3	TOTAL
Oxford: Woolgar	0.25		0.25	0	0.25	0	0	0.25	1
Oxford: Neyland	3.75	2.5	0.25	2	0.25	8	4	0.25	21
CES: Nunes	1	0.25	0.25	1	0.25	0	1	0.25	4
CES: Matias	0.75	3.25	0.25	0.75	0.25	2	1.5	0.25	9
CES: Res. Asst.	1	1	0.25	3	0.25	8.25	4	0.25	18
NIFU STEP: Kallerud	0.65	0.9	0.25	0	0.25	0	0	0.25	2.3
UvA: Hagendijk	1	0.25	0.25	0	0.25	0	0	0.25	2
Oxford: Healey	0.75		0.25	0.75	0.25	1	0.75	0.25	4
TOTAL	9.15	8.15	2	7.5	2	19.25	11.25	2	61.3

WP4 tasks: person-months

	Coord/pubs	Lit review	Wkshop 1	Prepare cases	Wkshop2	Fieldwork case	Write case	Wkshop3	TOTAL
TPAC/GTRC: Cozzens	1	0.25	0.25	0.25	0.25	0.25	0	0.25	2.5
NIFU STEP: Knell	1	0.25	0.25	1	0.25	3	1	0.25	7
TPAC student	0.75	2	0.25	2	0.25	6	2	0.25	13.5
FhG/ISI: Beckert	0	0	0.25	0.25	0.25	1	0	0.25	2
UoM: Zarb-Adami/Harper	0	0	0.5	1	0.5	3.5	1	0.5	7
UEM: Brito	0	0	0.25	0.25	0.25	0.75	0.25	0.25	2
Oxford: Healey	0.25	0	0.25	0	0.25	0	0	0.25	1
TOTAL	3	2.5	2	4.75	2	14.5	4.25	2	35

9 Ethical issues

This research raises no ethical issues.

ResIST Consortium Description

A – Participants and Consortium

Partner 1 – James Martin Institute for Science and Civilization, Saïd Business School (SBS), University of Oxford

The James Martin Institute (JMI) was formed in 2004 to identify and research science and technological issues critical in shaping the future of world civilization in the course of the twenty-first century. It will influence the course of technological and social change through the engagement of highest quality scholarship with key decision-makers in business, government and civil society. It is pursuing this agenda through building alliances of complementary groups across its own university and across the world.

Science, technology and inequality is one of the Institute's key themes and just as the contribution of ResIST will help to establish the core of this theme, equally the Institute's commitment to this line of work will help ensure that ResIST will have a strong legacy.

Steve Rayner, the JMI principal investigator on the ResIST project, took a BA Philosophy and Theology, University of Kent at Canterbury, 1974 and PhD Anthropology, University College London, 1979. He brings to the project the skills and experience of a distinguished international researcher on risk management, global change and sustainable development with a strong record of contributions as a public intellectual to policy and management debate.

He will collaborate closely with Peter Healey in the task of intellectual management of the project as whole and will help in the task of developing the framework on structural, representational and distributional inequalities in S&T capacity building under WP0.

Peter Healey is the ResIST coordinator. He brings to the team research management experience in national and international projects, most recently as coordinator of European Thematic Network STAGE (*Science, Technology and Governance in Europe*) – eight country thematic network funded under the European Commission's Fifth Framework Programme (FP5).

Peter Healey will:

- manage the ResIST project, including being responsible for periodic reports to the European Commission and for synthesis of the contributions to the final report;

- act as co team leader with Lídia Brito for WP0 taking significant responsibility for task (a) under that work package - building the conceptual framework - and lead responsibility for tasks (b) and (c);

- make significant contributions to WP3, particularly in the development of the initial framework document, decisions on the cases of innovative approaches to the remediation of inequalities which this document will frame, and in the study and write-up of the case studies themselves;

- participate strongly in the other work packages, largely through workshops an similar activity, as a basis for his role in synthesis and write up, and as a base for his other management responsibilities.

Steve Woolgar is a Sociologist who holds the Chair of Marketing at the Saïd Business School, University of Oxford. He was formerly Professor of Sociology, Head of the Department of Human Sciences and Director of CRICT (Centre for Research into Innovation, Culture and

Technology) at Brunel University. He took his BA (First Class Honours), MA and PhD from Emmanuel College, Cambridge University. He has since held Visiting Appointments at McGill University (Sociology '79-81), MIT (Program in Science Technology and Society, '83-84), Ecole Nationale Superieure des Mines, Paris (Centre de Sociologie de l'Innovation, '88-89) and UC San Diego (Sociology, '95-96). He is the winner of a Fulbright Scholarship, a Fulbright Senior Scholarship, and an ESRC Senior Research Fellowship. From 1997-2002 he was Director of the ESRC Programme *Virtual Society? - the social science of electronic technologie*s a £3½m venture comprising 22 research projects throughout the UK.

Steve Woolgar is a work package leader for WP3, with João Nunes, and a member of the Steering group for the whole project. He will be closely involved in the study looking at accountability issues raised by mundane technologies in WP3, and will advise on the strategies for engagement with policy and practice under WP0, and the key narratives which will structure the final report.

Dr Daniel Neyland is Senior Research Fellow at Said Business School, and Senior Research Associate of Green College, University of Oxford. He took his first degree (Social and Political Sciences) at Trinity Hall, Cambridge University in 1996, and his PhD on the social dynamics of surveillance systems from CRICT, Brunel University in 2000. Since then he has conducted research on accountability, regulation, governance, strategy and privacy.
Dr. Daniel Neyland, Senior Research Fellow, Said Business School

Dan Neyland's contribution to ResIST will consist of full-time research commitment for 21 months, beginning in month 4 of the project and completing in month 25. This time will be spent researching and articulating new accountability systems and issues of inequality as established under work package 3. This will involve three principal tasks. First, in conjunction with the work-package leaders, he will contribute to the production and analysis (and possible later revision) of a framework for evaluating innovative approaches to accountability. Second, he will produce a three-part, comparative, case-study based analysis of accountability issues in relation to mundane and pervasive technologies. This will focus on textile lifecycles, vaccines and e-waste (again as specified under work-package 3). Third, he will work closely with other members of the work-package team (who are focusing on approaches to the remediation of inequalities and to capacity building) in drawing together and producing collaborative reports on the findings of these studies. Beyond these work-package specific tasks he will contribute to the broader development of ResIST by taking a full part in meetings, discussions, outreach events and publications.

Jerry Ravetz is a Distinguished Visiting Fellow at the James Martin Institute. He is a philosopher who has made insightful contributions to our understanding of science as an intellectual and social phenomenon, in particular when the facts surrounding science are uncertain and the values in dispute. Recently he has reviewed European projects in the field of 'science, society and governance' extending back over the last ten years. Dr Ravetz will play the role of critical friend to the ResIST project and adviser to the management group.

Partner 2 – the Centre for Studies of Law and Policy in Europe, University of Leeds

Professor Louise Ackers is Jean Monet Professor in European Law and Director of the Centre for the Study of Law in Europe, University of Leeds. She brings to the project a deep knowledge of the legal basis and actual workings of European institutions, allied to an outstanding record of human resources in S&T and in particular mobility studies. This provides the background for her co-leadership across the range of tasks in WP2.

Bryony Gill works with Louise Ackers at the Centre for The Study Of Law And Policy In Europe and will work centrally on WP2 but also contribute to the conceptual framework building in WP1 and the writing of the project outputs in WP0.

Partner 3 – NIFU STEP, Oslo

NIFU STEP is an institutional merger offering a blend of interests and capacities central to ResIST. As the name indicates, NIFU STEP resulted from the recent merger of two social science research institutes. On 1 May 2004, the histories of the Norwegian Institute for Studies of Research and Education (NIFU) and Studies in Technology, innovation, and Economic Policy (STEP) were brought together to promote synergies between the complementary expertise of the two parent environments.

The mission of NIFU STEP is to improve our understanding of innovation, research, and education in social systems. The institute is combining theoretical and empirical methods from a variety of research areas and disciplines and is encouraging cooperation across disciplinary frontiers. Its ambition is to perform high quality theoretical and empirical research, by expanding empirical data and interpretations, and by promoting accessible and relevant analysis for our clients. One major objective is to expand the knowledge base for innovation, research and education policy development, and to develop an international policy learning arena for researchers and policy-makers alike.

Egil Kallerud is Senior Researcher at NIFU STEP since 1995. He is a philosopher by training and has before his time at NIFU STEP several years' experience as senior policy advisor in Norwegian research policy agencies. His main expertise is within science policy studies, and has taken part in several Nordic and European research projects within that field. He has worked with a number of ResIST colleagues in the STAGE thematic network (FP5), working on the Norwegian case and country studies, and on the development of STAGE's conceptual framework and methodology. In ResIST, he will be co-leader of work package 1, and will *inter alia* write a section on global IPR policy. He will also contribute to WP3.

Mark Knell joined NIFU STEP in January 2005, as a Senior Researcher. In total, he has more than fifteen years of experience in teaching and research in the fields of technology and economic policy research. Prior to joining NIFU STEP he worked as a Senior Economic analyst during research on technology transfer and spillovers between firms (NRC KUNI project) at Menon, a researcher on the biopharmaceutical innovation system (OECD NESTI case study project), national innovation systems in a globalising economy (ESF/Eurocores project) and on innovation and growth in LDCs (Norwegian Research Council project) at the TIK centre in the University of Oslo and as an economic affairs officer (P-4) in the United Nations Economic Commission for Europe (UNECE), a economic affairs officer (P-3) in the United Nations Conference on Trade

and Development (UNCTAD). He was also a consultant to the International Labour Organization (ILO) and the United Nations Industrial Development Organization (UNIDO) and provided policy advice to the European Commission.

While at De Montfort University he participated in two Phare Ace projects on multinational activities in the accession countries and obtained a Jean Monet Chair in European Economy. He was also a research Associate at the Vienna Institute for International Economic Studies where he helped develop and later participate in the EU Fifth Framework project Integration of Macroeconomic and S&T Policies for Growth, Employment and Technology (MACROTEC) as a work group coordinator and contributor. Current projects include two projects funded by the Norwegian Research Council (NRC): (1) SAKI research project on 'Innovation and Growth in the Norwegian Economy'; and (2) KUNI research project on 'How Local Firms Learn from Knowledge Intensive Multinationals'. These projects are being supplemented by continuing research on the productivity project carried out by UNIDO.

With Susan Cozzens, in ResIST he will provide leadership in all activities under WP4, and will in particular work on the development of a typology of emerging technologies and national conditions, and gather background documentation and identify data sources for analysis in established EU member states.

Partner 4 – Amsterdam School for Social Research and International School in the Humanities and Social Sciences, University of Amsterdam

Rob Hagendijk, is Dean of the University of Amsterdam International School for the Social Sciences and Senior Researcher at the Amsterdam School for Social Research. He is founder and Board Member of the Netherlands Graduate School for Science, Technology and Modern Culture and former president of the European Association for the Study of Science and Technology. He has been a visiting professor at Harvard's Kennedy School of Government and one of the organizers of the annual meetings of the Science and Democracy Network. Rob has a strong interest in both conceptual issues in the social sciences and the challenges of policy application. He was another partner and work package leader of the STAGE project.

In ResIST Rob will contribute to work package 3 to elaborate a framework for analysing and evaluating experiences with innovative approaches to accountability, taking into account the twin issues of redistribution and capacity building and cases of innovative bottom-up decision. Alongside these activities he will also take part in WP 0 and the development of the conceptual framework on structural, representational and distributional inequalities in S&T capacity building.

Partner 5 - Centro de Estudos Sociais (CES), Coimbra University, Portugal

The Centre for Social Studies (CES) is an autonomous research institution in social science, founded in 1978 and affiliated with the School of Economics of the University of Coimbra. Its research team (about 50 permanent researchers plus associate researchers working in specific projects and hired research assistants) brings together sociologists, legal scholars, literary and cultural studies scholars, economists, anthropologists, geographers, education scholars and medical doctors, from several schools of the University of Coimbra and from other Universities in Portugal as well as in other countries.

Three CES staff are working on ResIST. All were involved in the STAGE thematic network:

João Arriscado Nunes is a professor of sociology and a senior researcher at the School of Economics and Center for Social Studies, University of Coimbra. His main interests are in the social studies of biomedicine and life sciences and in public participation in areas involving science and technology. He has participated in several European and international projects and networks. He will co-coordinate WP3 with Steve Woolgar. Besides coordination tasks, within WP3 he will contribute to the elaboration of the preliminary and final frameworks and to case studies of innovative experiments of accountability. He will contribute as well to WP0, namely to the development of a framework on structural, representational and distributional inequalities in S&T capacity building, based on available empirical and conceptual work in comparative multi-country and multi-continental research, and to the organization of the Caribbean/Latin American regional meetings.

Tiago Santos Pereira is researcher at CES, with a DPhil in S&T Policy Studies, from the University of Sussex. His main interests are in science, technology and innovation policy. He has participated in several European projects and networks, and he is currently a member of PRIME network of excellence. He will be contributing to WP0 through the linking of empirical results with policy perspectives, on the basis of his work on S&T policy. His contribution will extend to the development of a framework of different forms of inequality in S&T capacity building, based on his work on implications of S&T policy for capacity building, at European level (analysis of S&T and Cohesion Policies) and at global level (analysis of the concept of 'periphery' in S&T), as well as to the development of links with policy and practice, based on his involvement with S&T policy-making at different levels (national and international)

Marisa Matias is a researcher at CES. Her main interests are in science and technology studies mainly in environment, health and environmental justice and in collective action and public participation. She was a member of the teams of several European and international research projects. She will contribute to WP3, namely to the elaboration of the integrated framework of accountability systems and to the development of case studies on innovative experiments of accountability with links to remediation of inequalities and capacity building.

A **research assistant** (to be appointed) will participate in the fieldwork on the case studies for WP3, support research activities for WP0 and WP3 and contribute to the preparation of frameworks and reports.

Partner 6 – The University of Malta

Malta is involved in this study because of the relevance of the skill-sets of its two participants, but also because of its unique characteristics as a small island state, the smallest of the new entrants to the EU on 1 May 2004.

Jennifer Cassingena Harper, whose degree is from the London School of Economics, has extensive experience with foresight techniques, which are often used to project the benefits and costs of new technologies. For example, she led the national foresight exercise in Malta which have lead to the presentation to Cabinet of the updated National RTDI Strategy and the launch of the National RTDI Programme. Dr Cassingena Harper was the local coordinator of the eFORESEE Project (FP5 STRATA Project), aimed at the Exchange of Foresight Relevant Experiences among Small Enlargement Countries) involving two other accession countries, Cyprus and Estonia. Current projects include the ERANET FORSOCIETY and COST Action A22 on Foresight Methodologies.

Noel Zarb-Adami, with degrees in physics and chemistry, will bring leadership experience from industry to the team. He has served as general manager of or consultant to several firms and has participated in foresight exercises in Mauritius, Seychelles, Malaysia, and Malta and with Shell (Petroleum). He also has direct experience at Head of Government level on Science and Technology policy (through CPTM) in Botswana, Namibia, Zimbabwe, Mozambique, South Africa, and Swaziland.

They will contribute to:

- Work Package 0 and in particular in relation assess to identifying the main policy challenges, on the basis of the established links with policy and practice in peripheral Europe. Main inputs relate to J Harper's experience with social foresight and broader engagement of stakeholders.

- Work Package 1 and in particular to the tasks related to Inequalities in the knowledge economy and on national, European and global policies.

- Work Package 4, in relation to following case studies of the introduction of a set of key technologies in several national contexts in the EU candidate states or Sub-Saharan Africa to examine their effects. Main inputs relate to current work by J Harper (with L. Georghiou) on the Scope 2015 project focusing on Sub-Saharan Africa together with insight from N Zarb-Adami's active involvement in the Commonwealth Partnership for Technology Management. (CPTM).

Partner 7 – METUTECH, Turkey

Being established in 1991 as a joint stock company by the Middle East Technical University Development Foundation, METUTECH manages the biggest and the most successful science park of Turkey. It hosts 130 companies 75% of which are SMEs. The existing company profile of METUTECH is based on software development, IT and electronics industry. Through its location in Ankara it is well positioned to maintain good links with Turkish policy communities, whilst through its IRC-Anatolia network METUTECH it also has dynamic links and ongoing project with national and international research communities and SMEs. It also manages various projects on science, technology and innovation in its pool of high quality external experts.

The ResIST team draws on the skills of three people:

Sirin Elci's expertise is in engineering, business management and science and technology policy, especially business incubation, innovation capacities and foresight. She is particularly qualified for ResIST by having prepared the innovation policy profile of Turkey for the Commission's study of the innovation policy challenges of the seven candidate states.

Ihsan Sezal trained in development studies and economics and has had wide experience in government and in collaboration with international organisations on educational and environmental issues. This included working for Tübitak, the Turkish Science and Technology Agency.

Fuat Berk Kirli has qualifications in physics, geological engineering and international technology transfer and after a spell in the private sector has most recently helped METUTECH manage an FP6 EU project facilitating technology transfer between European SMEs.

Their contribution is centred on the human capital and mobility studies in WP2.

Partner 8 – Universidade Eduardo Mondlane, Mozambique

Eduardo Mondlane University (UEM), which was founded in 1962 during the colonial period, became a national university after independence in 1975. So far, it is the largest institution of higher education in Mozambique that offers a wide range of degree programmes. In order to play a key role in the development process of the young nation, the UEM had to start building up its academic staff and to restructure its programmes almost from scratch. The university now is in the middle of a dynamic, political, cultural and socio-economic process. An important determinant in this process is that Mozambique is one of the poorest countries in the world and that the university not only has to work with extremely limited means, but also has to re-assess priorities constantly.

Lídia Brito, is an expert in Forestry who has worked increasingly in science and technology policy: until recently she served as Minister of Higher Education, Science and Technology in Mozambique. She is also a member of a number of international bodies including the High level Committee UNESCO-NEPAD for Science since 2002; and of the Executive Board of UNESCO – IHE in Delft since 2003. She has worked closely with our colleagues from CES (partner 5). She will bring a developing country perspective to the team, and practical experience with the issues policymakers face in making choices about the introduction of new technologies in such contexts under WP4 and WP0, which she will co-lead with Peter Healey.

Partner 9 – CREST, University of Stellenbosch

The Centre for Interdisciplinary Studies (CENIS) was established on the 1st of January 1995 as a research centre within the Faculty of Arts at the University of Stellenbosch. CENIS was established with the explicit aim to:
- Undertake and promote interdisciplinary studies in social sciences research;
- Conduct and promote research in the "meta-fields" of the methodology and sociology of the social sciences;

The renaming and repositioning of CENIS as the Centre for Research on Science and Technology (CREST) in 2003 consolidated this change and signified a fundamental commitment to research issues in the field of the social and ethical study of science and technology. The new name of the Centre, with its focus on public research and development (R&D) and its social consequences, was launched at a function in Stellenbosch on Thursday 25 September 2003, with Dr Ben Ngubane, then Minister of Arts, Culture, Science and Technology as the guest speaker.

Science, Technology and Inequality is one of CREST's research themes, and CREST was in one sense the origin point of the ResIST project when Peter Healey and Susan Cozzens worked with Johann Mouton and his colleagues in September 2003.

Four CREST staff are engaged in ResIST, concentrated in WP2.:

CREST has specific experience and expertise in three areas of WP2. First, as part of the contextualisation of the brain drain phenomenon between South Africa and the UK, **Dr Frank**

Teng-Zeng at CREST will write a background paper on the larger diaspora of African scientists. In this regard, he has already written a number of related papers and reports and will also call on the most recent available studies in the field.

Second, in understanding the context, history and dynamics of the Medical and Health Sciences in South Africa, CREST will call on a long track-record of research of the South African science system. **Prof Mouton and Mr Boshoff** have both done numerous studies which map the SA science system. In addition Mr Boshoff is currently finalising his PhD (to be submitted in April 2006) which is a study on scientific collaboration with a peculiar focus on the medical and health sciences in SA. As part of this study, he has worked extensively on the history and structure of R&D in the field of health sciences.

Third, CREST also has a track record in the field of scientific migration studies. One of our researchers, **Tracy Bailey**, conducted a study on brain drain in South Africa which involved both theoretical and extensive secondary analysis of primary data. Although Ms Bailey is currently not a staff member of CREST, she is available to assist on this component of the project.

Partner 10 – ISI, Fraunhofer Gesellschaft

The Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI) complements the natural science and technology-oriented activities of the Fraunhofer Society. About 70 researchers are involved in interdisciplinary research at the interface between technology, economy and society. By analysis of promising technologies, development of research priorities and monitoring of technology policy programmes, ISI assists decision-making processes in the public and private sectors. The analysis and evaluation of science and technology policy from a national and an international perspective is an integral part of the research conducted in the Fraunhofer ISI which will be central to its contribution to ResIST. In addition, the institute deals with the transdisciplinary topics on an inter-group basis: technology impact assessment, (policy) evaluation research and regional/region-specific research.

There are three participants from ISI in ResIST, Ulrich Schmoch, Susanne Bührer, and Bernd Beckert:

Ulrich Schmoch, mechanical engineer and sociologist, was, until recently, head of department and is presently director of a taskforce on innovation indicators and reader in sociology at the University of Karlsruhe. He has 20 years background in science and innovation policy with special focus on indicators, knowledge transfer, analysis of performance of science, and conception of instruments for innovation policy. He brings in practical experiences of the economic development in West Africa and is presently engaged in a project on the role of higher education in developing countries with many topics similar to those of RestIST. Furthermore he was engaged on studies of the science structures in Turkey, North Africa, and Brazil. These experiences which are useful for WP0 and WP2.

Susanne Bührer, sociologist, studied political sciences, sociology and history. She worked at the Mannheim Centre for European Social Research in the field of migration, ethnic minorities and social networks. Took her doctorate 1997 at the University of Mannheim (Dr. phil) about the

topic "The influence of social capital on the migration decision". At the Fraunhofer ISI she worked is various fields closely linked to the topics of ResIST, in particular analysis of communication and cooperation structures; social network research, conception and evaluation of (national and international) research and technology policy; programme evaluations; monitoring evaluation of institutional promotional measures, participative technology assessment and gender research. As to WP2, she brings in experiences of a project on the international and cross-sectoral mobility of German researchers.

Bernd Beckert studied political science, communications science, and sociology. His work concentrates on development patterns, diffusion and use of new media; consequences of the convergence development in the media and IT sector concerning new business opportunities and new usage patterns; market analysis in the IT industry on regional, national and international level; organizational changes as a requirement for successful IT implementation and economic changes as a result of the Internet development; evaluation of government programmes to support the IT and media industry; broadband Internet developments from a technological, provider and user perspective; assessment of the Nano-, Info-, Bio-, Cogno (NBIC) development, study of "Convergent Technologies" as a new field of research and software-supported scenario analysis and other forecasting and planning instruments. These experiences are valuable for WP4.

Partner 11 – The Technology Policy and Assessment Center (TPAC), Georgia Tech (GTRC), USA

The Technology Policy and Assessment Center (www.tpac.gatech.edu), formed at the Georgia Institute of Technology in 1981, develops analytic tools for innovation strategy and management. It specializeS in innovation studies and models, evaluation of research and development, science and technology indicators, and technology foresight, forecasting, and assessment. The Center is located in the School of Public Policy and is affiliated with the School of Industrial and Systems Engineering. The Director is Susan Cozzens, of the School of Public Policy and the Co-Directors are Alan Porter and J. David Roessner.

TPAC serves a wide range of clients from local to international.

Susan Cozzens, a sociologist, has focused over the last few years on the connections between science and technology policies and inequalities. She has published on the connections between innovation policies and wage inequality, as well as on innovation policies to address the needs of the poor.

Cozzens will provide leadership in all activities under WP4, from coordination and preparing publications to case studies and field work. She will be assisted by a **doctoral student** who will perform a major portion of the literature review and case study work for cases in the U.S. and Latin America.

She will work with a group developing the forms of inequality framework in WP0,

She will also co-lead WP1, again leading in a broad contribution across the tasks, making a particular input to the work on global policies..

A2 Subcontracting

The coordinator will subcontract the design and construction of the project website. The website will be built as a content management system allowing participants to update themselves. The administrative assistant will take major responsibility for coordinating this activity.

The appropriate Oxford tendering process for a project of this nature and scale will be followed.

Each partner will also subcontract the required audit(s).

A3 Third Parties

This project embodies the belief that change in policy and practice is only likely to be secured if the countries most likely to be affected by the results fully participate in the study. That is the rationale for the involvement of South Africa and Mozambique (as it is for a candidate state, Turkey). In addition, CREST, as arguably the African continent's most significant academic group on science, technology and innovation studies, is both a strong resource to this study and is likely to be an important source of policy advice in using S&T to address the needs of the poorest.

In a sense a similar rationale supports the involvement of the United States in the study. The US has an overwhelming effect on the global distribution of scientific resources, by virtue of its dominant position as a source of science and technology, but also through the effect on international organisations and regimes, through its influence on restrictions in the supply of strategic goods of various kinds, and through the terms of its own bilateral agreements on S&T.

Independently funded for this study, Susan Cozzens is well placed to pursue these issues, and is integrally involved in the project, being a co-leader of two work packages. She is the current chair of a AAAS committee which has pursued the issue of science, technology and inequality and organized an influential workshop. She and colleagues have produced much of the conceptual work which underlies ResIST, and of course she is also well placed, by background, reputation and location, to undertake the interviewing and scrutiny of US based policy organizations under work package 1.

Professor Cozzens is pursuing funding for her contribution to the project through the US National Science Foundation. A decision will be made before the planned start date of ResIST. In the event of her proposal to NSF being unsuccessful, the James Martin Institute at Oxford will underwrite her participation so that the consortium's integrity is secured.