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Study to identify the costs of EU framework programme projects to UK higher education institutions

A report by JM Consulting to Universities UK and HEFCE

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Executive summary

Purpose and scope

1. The purpose of this study was to investigate the costs and benefits to UK higher education institutions (HEIs) of undertaking research projects funded by the EU within Framework Programme 6 (FP6). In particular, the study was intended to compare cost recoveries under the two main EU funding models and across a range of different types of project.

2. The work was commissioned by Universities UK and the Higher Education Funding Council for England (HEFCE) with support from the Office of Science and Technology (OST). It was conducted during the autumn of 2005. The main method of work involved looking at a sample of individual projects covering different project types ('instruments') and different disciplines at six case study HEIs. The HEIs covered a range of types of institution, and the projects covered five main instruments as follows:

    - Network of Excellence (NoE)
    - Co-ordination Action (CA)
    - Specific Targeted Research Project (STREP)
    - Integrated Project (IP)
    - Specific Support Action (SSA).

3. A profile of the institutions and of each of these types of project is provided in the report.

4. There are some other types of project under FP6 which were not reviewed in this study as they were not in the terms of reference. The institutions also had significant EU income both in other areas of FP6, and outside FP6, including for example projects from earlier research framework programmes. For convenience references to FP6 should be understood to deal only with the five instruments above, unless stated.

Range of projects and importance to the institutional portfolio

5. The six institutions have a total research income of approximately £300m. The proportion of the institutions' research income from EU activity varies from 6% to 60%. Their total EU income is nearly £30m, with the five types of FP6 project listed above accounting for nearly one-third of this.

6. The study aimed to cover these five types of instrument equally. However, we found that the incidence of these projects varied significantly. The sample was therefore not chosen to be representative of the sector as a whole, or to include all types of instrument proportionately. It was chosen on a pragmatic basis to give a view of the costs and benefits of the most common types of project, across the three main discipline types (medical, physical sciences, social sciences/arts and humanities) and to include projects both where the institutions acted as co-ordinators, and where they did not.

7. Institutions participate in FP6 projects either as a partner or as a co-ordinator. Co-ordinators generally have a significantly larger role, and higher costs: they act as the legal contractor, and usually as project manager for the consortium which normally has many partners spread across several countries. Although we understand that the number of partners is typically in the range 10 to 30, it is often much higher. This varies by type of project – IPs typically have the largest number of participants, and SSAs may have only one.

8. The size of individual projects, and of the FP6 project portfolio, varied greatly. For example at one Russell Group institution which had a portfolio of 42 FP6 projects, the scale of these varied from €15,000 to €1m with an average of just over €250,000 per project. At this institution, IP projects had the largest average budget at €400,000, and CAs the smallest at €50,000.

Study method

9. The study mainly focused on building up a picture of the full economic cost of each project to the institution using the Transparent Approach to Costing/full economic costs (TRAC/fEC) method which is now the standard method for costing UK research projects in higher education. We then compared these costs to the two main EU cost models - full cost (FC) and additional cost (AC) - and also looked at the benefits and other impacts of the projects.

10. TRAC is designed to determine the full long-run cost of research projects on a sustainable basis. So TRAC/fEC includes, for example, an element for risk and the cost of financing; a share of the cost of depreciating and renewing buildings and of non-estates indirect costs; the costs of the relevant time of permanent academic staff; as well as direct costs such as research assistants, equipment, consumables, travel etc. TRAC also includes support costs which, for example, cover the costs of activity such as preparing bids.

11. Certain TRAC indirect and estates costs are ineligible for funding under FP6 (see chapter 1) – these lead to a reduction in the indirect and estates costs that could be considered for reimbursement of 15-30% at the six institutions. The levels of reimbursement funding also differ between the two main EU funding methods. Notwithstanding these variations in funding, the TRAC/fEC costs are the real cost to the institution of running these projects.

12. The FC model allows contractors to be reimbursed for a proportion of all eligible costs, both direct and indirect. The proportion reimbursed varies according to the type of activities being undertaken: different instruments involve different activities, and therefore have different recovery rates. For example:

    - NoEs (with up to 100% of eligible costs reimbursed) provide the best recovery under the FC model
    - demonstration activities on an IP or STREP offer the worst recovery (with 35% reimbursement)
    - research activities, which make up the majority of the work on most STREPs and IPs, are reimbursed at 50%.

FC is the default method and is used by industry and by many UK research institutes and establishments, but not by UK HEIs.

13. All UK HEIs use the additional cost model which allows institutions to charge 100% of additional direct costs, plus 20% of most of these direct costs as a contribution to indirect costs. The AC model is a derivation from the Full Cost model, and is used by certain legal types of organisation which do not have accounting systems enabling them fully to identify direct and indirect costs at the project level. Institutions which have systems that allow them to identify their full costs must use the FC model – TRAC as it stands is unlikely to be acceptable, but we believe that it could be easily developed for this purpose.

14. If the use of the AC model was to change (e.g. in Framework Programme 7) it could be beneficial for UK HEIs to switch to the FC method (or its equivalent). We believe that TRAC, slightly developed, should make it possible for them to do so with little difficulty. But, it would be desirable to establish this through a UK-wide initiative in conjunction with the OST or Funding Councils, rather than on an institution-by-institution basis.

Findings on cost recovery

15. FP6 is a cost-sharing programme, and cost recoveries of 100% are not to be expected under either the AC or FC models.

16. This report shows the average cost recovery for each type of instrument at each institution on the AC basis of funding currently experienced.

17. The unrepresentative nature of the sample means that an overall average cost recovery across all 47 projects should only be regarded as illustrative, but, at 55-60% under the AC model, is in line with national figures from informal calculations based on TRAC.

18. These recoveries vary widely due to a number of factors including the nature of the project and whether the institution is co-ordinating. At one institution, for example, cost recovery on an AC model, on the 10 projects we reviewed, varied from 26% (on an IP project) to 60% on two STREPs and an SSA. At one institution, it varied from 32% on a STREP, to 85% on an IP.

19. Looking across the project types, overall recovery across the six institutions on an AC basis varied from 26% to 85%. The average recovery for the different instruments ranged from 50% to 70% under the AC model, with STREPs and NoEs at the lower end, and SSAs at the higher.

20. If the FC model had been applied, the recoveries on individual projects would have differed quite significantly (for example, one institution's 26% recovery on an IP project would become 46%, but some other projects would recover less well). There is a marked difference between types of instrument, with the average recovery for IPs and STREPs being 45-50%; and that for NoEs, CAs and SSAs being 77% to 87%. IPs and STREPs make up three-quarters of the six institutions' portfolios of these instruments.

21. At the level of the aggregated 47 projects (with the reservations we have noted above) the overall recovery under FC would not be significantly different from that under AC (that is, also in the range 55-60%). So, at a high level, there is no material difference between the AC and FC cost models, in terms of cost recovery for institutions.

22. These levels of recovery if replicated across all EU activity at the six case study institutions would lead to deficits of about 43% of TRAC full economic costs on their EU portfolio. This implies that these six institutions would have made a financial contribution to their EU work of £12m in aggregate, varying from just under £1m to over £3m.

Benefits and other impacts

23. The levels of cost recovery we have identified above are relatively low, and would not be acceptable, or sustainable, if they were maintained across an institution's whole research portfolio. However, it is only very recently that institutions have become aware of the full economic cost of research, and it is only in the current academic year (2005/06) that the UK Research Councils have begun to fund research on an 80% of fEC basis. So, while the cost recovery on FP6 projects is relatively low, we would not expect this to be a major consideration for institutions as yet, and this was confirmed in our interviews.

24. For the three research-intensive universities in our sample, EU FP6 research makes up less than 10% of their research portfolio, and arguably, even as sustainability considerations become more significant, the cost recovery will not become a major factor in decisions about bidding for projects.

25. For the three less research-intensive universities, the position is rather different. EU FP6 research makes up a more significant part of their total research portfolio, and in one case FP6 is in fact the major source of research funding. For these institutions therefore the level of cost recovery is likely to be a more significant consideration within their overall financial strategy and planning.

26. For all these institutions, however, the level of cost recovery will only be one factor to consider alongside the wider pros and cons of participating in FP6.

27. We discuss the benefits and other impacts of participation in FP6 in chapter 4.

28. The main negative aspects of collaboration in FP6 projects identified by those we interviewed were:

    a. A high level of bureaucracy and administrative effort compared to UK Research Council projects.

    b. Difficulties in managing fluctuations in exchange rates.

    c. A tendency (especially in large consortium projects) to experience sometimes arbitrary and short-notice cuts in budgets.

d. Various difficulties around project management – which is often critical in FP6 projects. Some projects benefit from having a dedicated project manager, but where this is not possible, significant difficulties and risks can arise in large, complex, multi-institution projects.

e. The different natures of research work that the EU wishes to fund. There is a higher emphasis on research inputs (staff etc) and on specific deliverables compared to many UK-funded projects. However, not all those we spoke to regard this as a disadvantage – it is welcomed by some; others consider the work has less academic prestige.

29. There are also significant benefits associated with participation in FP6 projects. The main benefits identified to us fell into a number of areas as follows. The first four of these (in bold) were mentioned the most consistently by those we interviewed:

i. Funding for different types of project, in particular:

- large, transnational, multi-disciplinary projects
- collaborative networks
- providing flexible funding for areas that other funders might not support
- non-elitist approaches
- an industry focus.

ii. The European perspective

- enabling UK academics to experience and benefit from a broader perspective on their research
- from new ways of working and thinking
- from access to a much larger pool of expertise.

iii. Collaboration

- the benefits of collaboration are also very significant, including access to up-to-date knowledge and techniques
- free exchange of ideas
- ability to make new contacts.

iv. Providing research capacity

- as a further source of funding, and one which arguably is more accessible to some of the less dominant research institutions, FP6 plays a significant role in building UK research capability.

v. Diversification of funding and risk avoidance.

vi. Contribution to the Research Assessment Exercise (RAE).

vii. Career development for research staff.

viii. Ability to work with the best in the field.

ix. Opening up new opportunities, which as well as academic benefits, may offer higher cost recovery.

x. Continuing work started under earlier framework programmes.

xi. Higher success rates in bidding than with some other funders.

The future

30. It was not part of the remit of this study to make recommendations. However, there are some obvious messages for institutions and for the UK Government. We would highlight the following.

For institutions, there are two main messages:

a. If cost recovery overall continues to be lower in future than on most other publicly-funded research, HEIs need to understand why they are doing EU work, and to have a view of its place in their research strategy, and the particular benefits it brings. It will become even more important to operate with a balanced portfolio of research as sustainability considerations become more apparent.

b. HEIs can significantly improve the ratio of benefits to costs by managing their research programmes pro-actively, and in particular by providing support to academics engaged in planning and managing FP6 projects. In particular all allowable costs should be included; bids and contract negotiations made professionally; and academics encouraged in good project management procedures, including management of their time input as well as costs.

There is a message for the Government that EU research delivers significant benefits to the UK economy and higher education, but that institutions and academics bidding for EU projects in the UK are significantly disadvantaged by being outside the eurozone compared to those who are inside. A further factor, which is outside the remit of this study, is that UK HEIs are expected to provide all the cost-sharing element of EU participation from their own research budgets – which are already in deficit.

There are two additional messages for both the sector and for Government:

a. It is likely that the greater awareness of full economic costs and pressures to manage the sustainability of research will slowly act to make EU-funded research, if funded at current rates, appear less viable and less attractive to institutions. The OST and Funding Councils can do a lot to moderate (or accelerate) this process depending on the way they publicise and pursue the existing policy initiatives on research funding and sustainability. This may become even more pertinent with any growth in funding from the new European Research Council – if funded with current rates of recovery, this

would undermine the plans of both institutions and UK Government to move research activity onto a sustainable basis.

b. Alternative cost models (such as AC if it is still allowed, or a new flat rate model) are likely to be less attractive than a model based on the FC method in future framework programmes. Therefore, all UK HEIs would be well advised to ensure they have systems that can support a model like FC. TRAC, slightly amended, could support this, but it would be difficult and wasteful for every HEI to have to manage this process on its own. Moreover, this transition could be inhibited or prevented if individual institutional auditors had an insufficient understanding of the issues involved, or took an unduly legalistic view. There would therefore be a very strong argument for a co-ordinated sector-wide approach to this.

1 Study background and context

Introduction

1.1 We have prepared this report for the Higher Education Funding Council for England (HEFCE) and Universities UK (UUK) with the support of the Office for Science and Technology (OST). The study aimed to identify the costs and benefits of projects funded under the EU Framework Programme 6 (FP6) to UK higher education institutions (HEIs). This is a technical report designed to be read by pro vice-chancellors of research, directors of research services, and those responsible for supporting applications to the EU for FP6 projects.

1.2 The executive summary gives an overview of the study and its findings which is designed for policy-makers, heads of institution and others who may not need to look at the detail of the work being undertaken on these projects.

1.3 Chapter 1 describes the background to the study, the objective of the work, our methodology and an overview of the instruments studied and the institutions involved in the exercise.

1.4 Chapter 2 provides a description of the instruments, the cost models used for pricing and the method used for costing (the Transparent Approach to Costing - TRAC).

1.5 Chapter 3 describes the costs, funding and recovery of the case study projects. It describes a project being funded under each instrument in some detail. It gives reasons for the different cost profiles, and their cost recovery.

1.6 Chapter 4 describes the main difficulties of carrying out work funded through FP6, and also the benefits. Chapter 5 considers the future of this work in UK higher education (HE).

Background

1.7 The European Union is a major source of research funding for UK HEIs. UK HE participants received 25% of the funds in FP5 and participated in 5,240 or 20% of FP5 projects. By July 2004 UK HEIs had been awarded €213m in FP6 – nearly 30% of the total - with involvement in 18% of the FP6 projects awarded to that date. However, the introduction of TRAC in UK HEIs has already highlighted that the costs of undertaking research commissioned by the EU are significantly greater than the funding which the EU provides, particularly for those activities funded through the framework programmes. This has helped to reiterate concern within the sector that undertaking EU-funded research is financially unsustainable. This project considers issues, both financial and non-financial, that may influence UK HEIs' future involvement in the framework programme.

1.8 The EU framework programmes operate a range of cost models. Institutions which do not have the capacity to identify the full cost of their research are able to use an additional cost (AC) model, which is the model primarily used by UK HEIs. The introduction of TRAC means that the UK will potentially be able to use the full cost (FC) model to cost EU-funded activity. This project

also considers whether HEIs would be disadvantaged in moving to this model.

Objectives

1.9 The aim of this study was therefore to establish the costs and benefits of research projects being carried out for the European Union within Framework Programme 6 in UK higher education institutions, and as part of this to identify:

- the full economic cost (fEC) of FP6 activity to an institution and how this relates to the level of grant paid for by the EU
- whether/how these costs vary according to the activity type and other factors
- the benefits of EU research activity, by understanding the motivation for undertaking EU funded research, and how far the outcome meets expectations.

1.10 Funding for FP6 projects is identified for each project under both the additional cost model (which represents the grant that UK higher education institutions are actually receiving) and the default full cost model. These are described briefly below and more fully in chapter 2.

1.11 The study covers projects being carried out under the five project types (or instruments):

- Network of Excellence (NoE)
- Co-ordination Action (CA)
- Specific Targeted Research Project (STREP)
- Integrated Project (IP)
- Specific Support Action (SSA).

1.12 These instruments are described in chapter 2.

1.13 Other FP6 projects not covered under this project are Marie Curie projects, small and medium enterprise (SME)-specific activities (CRAFT and Collective Research), and some infrastructure projects (the Integrated Infrastructure Initiatives and Transnational Access projects). Where we use the term FP6 in the rest of this report we are referring only to the five instruments listed above. Funding for the other types of FP6 activity or any other EU activity are not covered: these streams follow a variety of different funding methods.

1.14 FP6 is deliberately and intentionally a cost sharing model and recoveries of 100% under either the AC or the FC model are not to be expected.

EU activity and UK higher education institutions

1.15 Research funding from EU sources amounted to £221m in UK HE in 2003/04[1]. While significant, certainly in terms of its proportion of total FP6 funding, it is not the major part of UK research funding. It comprises some 8% of research funding in HEIs, and only 1.3% of the total income of the UK HE sector.

1.16 FP6 projects generally started in 2004 and 2005. In 2004/05 they comprised a significant, but not the majority, part of institutional EU activity. As projects within the programme reach a peak of activity, and as FP5 projects complete, the proportion of EU funding that relates to FP6 will obviously increase. But as an illustration, Figure 1 shows the relevance of FP6 within EU funding for 2004/05 for the six case study institutions studied under this work. Note that in order to promote the anonymity of the participating institutions we have labelled them differently in each table and placed them in different orders.

Figure 1: Proportion of EU research activity that is FP6

Institution	i	ii	iii	iv	v	vi
All EU income (1)	£7m(2)	£4m	£3m(2)	£2m	£5m	£6m
% that is FP6 (3)	16% (4)	<10%	9% (4)	75%(4)	20%	50%

(1) Draft 2004/05 figures provided by institutions. These have been significantly rounded.
(2) EU Commission income only
(3) Estimates provided by institutions. This figure includes all FP6 funding, unless where indicated under (4).
(4) FP6 expenditure on named five instruments only: therefore excludes Marie Curie and other FP6 projects

1.17 EU activity outside FP6 consists mainly of Framework Programme 5 (FP5) projects, programmes managed by other directorates general (DG) of the European Commission such as the Socrates Programme (DG Education and Culture), and Structural Funding such as European Regional Development Fund (ERDF) and European Social Fund (ESF). The total EU income figure given above, calculated for returns to the Higher Education Statistics Agency (HESA), also includes funding from EU government bodies (but this would be a very small component).

1.18 EU activity in each of the six case study institutions covered in this review is briefly described as following:

[1] Higher Education Statistics Agency, HESA

Case Studies

This is a Russell Group university with extensive involvement in FP6. It has over 100 current projects (that is, with expenditure in 2004/05) and dozens more in active negotiation following agreement in principle (giving a total of approximately 160). The breakdown of projects (in progress or completed) is approximately: 29 STREP, 23 IP, 24 NoE, one CA, four SSA and 30 other (Marie Curie, I3 etc).

In 2004/05, the university received £7m from all European Commission (EC) activities of which £4.5m, 64%, was from FP6 projects (all instruments). But this is only a small part (less than 5%) of its total research portfolio. Unusually for a UK university, the EU is not the biggest source of overseas research income, with US sponsors and partners being more financially significant.

The university has a long and successful history of involvement in framework programmes, with some of the current FP6 projects having grown from projects in FP3. Involvement is across all departments and encompasses many individuals as principal investigators, from medical professors to senior lecturers in electronics. The nature of the research focus at this university lends itself to successful positioning in EU FP work, with a close alignment between the technological and application focus of the university and the priorities and themes of the FP6. The university does not, however, seek out opportunities to work as co-ordinator on projects. Of the current portfolio, it is co-ordinator on only three.

There is, however, a great deal of diversity in the reliance on EU funding between individual departments. There are some departments for which EU FP funding is not applicable; most have a balance of funding between project and sponsor types; others are heavily reliant on the continuation of funding on relevant themes through the framework programme.

For the university as a whole, the central team is intending to take a more strategic approach to pursuance of FP funding in the 7th programme than has been seen to date. A strong central team supports the academics in their liaison and negotiation with partners and the EC and is positioning itself to be more proactive in ensuring a balanced and coherent portfolio of FP7 projects. There is a keen awareness in the team of the disparity between benefits and cost recovery in some of the lower value projects which have in the past been pursued, and consideration is being given to setting a lower limit on the level of funding at which the institution would get involved.

At a strategic level, the balance of costs and benefits of involvement are clearly articulated. This university has a thorough understanding of its cost structure and comparative recoveries between sponsors, and is aware that returns on FP6 projects are lower than for other major sponsors. However, it is also fully aware that the framework programme is a partnership and offers benefits to both the corporate university and individual academics which are not available through UK-sponsored projects alone. It recognises three main drivers for its involvement in EU research:

- the prestige value of the projects
- involvement in major research networks and ‘big team science’ where working alone is impractical
- recognition of its responsibility to represent the UK in European research, and make a contribution for the benefit of ‘UK plc’.

This institution is a post-1992 university that has very little involvement in EU FP6 projects. It is not a major player in research, receiving less than £2m of HE Funding Council research funding in total. In 2004/05, the university received just under £1m from all EU activities of which less than 10% was from FP6 projects – this will rise in the next few years, however, as successfully negotiated projects reach a peak of activity.

At senior management level it believes that its involvement in EU framework programmes is at about the right level but it would prefer to see a broader spread of individual departments engaged. The university has actively pursued this across areas where it feels the institution has specific expertise but has as yet been unsuccessful in breaking into fields beyond its current involvement through computing and health studies.

It considers one of the plus points of European involvement as being its 'non elitist' approach, allowing universities not traditionally in the lead in research to be involved in rewarding multinational partnerships. But, at the same time existing relationships between competitors prevents its entry into new areas.

This institution appears quite cautious in its approach to pursuing EU funding and this seems to be due to some overexposure in FP5: 'with this (low) volume of research, there is no hiding place for projects which don't recover'.

The university has five current FP6 projects and one in active negotiation following agreement in principle. The projects range from a 36-month €35,000 Co-ordinated Action, to a 54-month €714,000 Integrated Project involving 17 partners and a €3.4m budget, for which this university is co-ordinator.

The motivation of individual investigators to be involved in EU projects differs across these five projects. For three of the projects, the research represents a continuation of many years of work, funded through a variety of EU sources including FP and specific DG funding. Several researchers involved are at early stages of their careers and are benefiting from the opportunity to broaden their management experience and gain exposure to differing (managerial and research) cultures. For another research team, the work is well within its current capabilities and provides no new avenues of research, but does contribute to ensuring a balanced portfolio of funding across the centre.

This is a university which recognises both the corporate and individual benefits of being involved in EU projects but is taking a managed approach to pursuing increased opportunities in the knowledge that there is also a cost, in management and financial terms, to involvement.

This institution is a research-intensive, medium-sized university with £3m of its income coming from research grants and contracts from the EC. The university's current FP6 portfolio (over the whole life of the projects) is worth £1.7m. Although spending in 2004/05 amounted to only £350,000 on FP6 (the specific five instruments) the level of spending will increase as more projects reach a peak of activity.

The range of current and completed FP6 projects (for the five instruments under review), 14 in all, covers 11 in social sciences and three in other sciences (biosciences and computing specifically). All five instruments are represented but with only one Co-ordination Action and an even mix of the other four (IPs, STREPs, NoEs, and SSAs). The largest budget is for participation in an Integrated Project for £600,000 over five years and the smallest a £9,000 budget for participation in a Network of Excellence project.

The university's participation in European research is driven not by a central strategic view but by the interests of the individual academics. Management decisions are devolved to deans of schools where approval levels rest. In practice there is a variety of views on participation across the deans and the individual academics, as one would expect.

The university's view of the benefits of involvement is based on the knowledge that although cost recoveries on EU work are comparatively low, so are other recovery rates for many other sponsors and a balanced view of funding sources needs to be taken in the context of the

academic value of the work being done.

The university does not encourage involvement as a co-ordinator – only one of the current FP6 projects is being co-ordinated here. The disadvantages are seen not only in financial terms (with a 7% cap on management costs being seen as inadequate) but also from the administrative burden and responsibilities and liabilities which are involved, and which it considers adds little value in terms of the research output.

There is a well organised and knowledgeable central team of research administrators available to support the academics in their bids and management, and although the application process is seen as potentially long-winded it is straightforward and managed largely pro forma. The tangible disadvantage (not only for co-ordination but also for meeting requirements of the co-ordinators) arises from the post-award management. In particular the requirements for audit are an area of concern for this university. This university uses a 'Big 4' audit firm for meeting the audit certificate requirements of the FP6 programme. Unless the exemption provisions apply (which are welcomed here), this entails approximately £3,000 in audit fees for each project claim, which is not always covered in the project budget.

Looking forward to FP7, the university is not currently taking a particular position on involvement: it expects decisions on involvement to be taken by academics and their deans entirely on the basis of the value of the research involved, its fit with school strategies, and with a full knowledge of the fEC: where there are shortfalls, there will need to be local plans to balance that shortfall.

A Russell Group university with FP6 activity comprising 20% of its EU income. All five instruments are included in the current FP6 portfolio of some €11m (this excludes Marie Curie) – a portfolio of 42 projects. The euro budgets for the institution range from €15,000 to €1,045,000 (both the lowest and highest are where the university is a partner on an IP). The average project budget is €264,000 (this would be considerably lower than the average total project budget for all partners). The institution's average IP budget is just under €400,000, with the other instruments holding smaller budgets on average - NoEs (nearly €300,000), STREPs (nearly €200,000), SSAs (just over €100,000) and CAs (€50,000).

The university has done well under FP6 (and had a particularly big push on Marie Curie). It has a strong central EU support team, with particular strengths in identifying niches or projects that might fit the various instruments and thematic priorities. This team has been recently strengthened and development funds have been made available to academics to encourage their participation.

The institution is particularly interested in the human mobility/staff training initiatives, and in the new European Research Council (FP7) where the type of research will be more fundamental and more closely allied to the university's interests. It is reconciled to receiving only part-funding for the type of activity covered under the FP6 instruments being studied here, and will continue to be a co-partner (but is unlikely to wish to take a significant role in managing or leading these projects).

Academics are encouraged to take up EU funding. However, they are now required to manage their departments on a sustainable basis (they need to cover the full economic costs of their activities), and they will need to look at the value of each project they take up compared to its cost recovery.

This institution is a 1960s university with 15% of its research income coming from EU. FP 6 is its biggest source of European funding, but its European research portfolio includes projects outside FP6, to the value of £0.6m (€853,000). These contribute to the research income total but we have not looked at the costs and recoveries of these other programmes in this project.

The university currently has 17 live FP6 projects (excluding Marie Curie) which are almost all in the physical sciences. The total budget for the institution of the projects under the five instruments is just over £2m (€3.05m), with individual project budgets at the institution ranging from £9,000 (€13,000) to £300,000 (€441,000). The university co-ordinates one of these projects (a STREP). It has very few SSAs and no CAs.

Like most universities, it does not have a formal policy on EU activity centrally – the schools have significant financial responsibility. However, the institution does provide a strong central support unit for EU activity.

In general, academics are encouraged to make research applications to all funders, but are also encouraged to ensure that where recovery is comparatively low, as on EU projects, it should form part of a wider portfolio of activity. Academics are advised to make sure their research projects are carried out as part of a programme of related research, so that synergy is created and a shared infrastructure base is used.

The university considers that its approach to EU project participation (and indeed all areas of activity) might increasingly be affected by the Funding Councils' or Government's use of metrics and indicators that measure sustainability.

This institution is a Russell Group university with just under 8% of its research grant and contract activity funded through the EC. Of this, about half is funded through FP6. It has nearly €19m funding for projects under the five FP6 instruments we studied – they comprise 54 of the 66 projects in the institution's total FP6 portfolio of €23m.

The project budgets range in size from €8,000 to €3.7m (the budgets of all the partners on these projects are considerably higher than this). About 15% of projects are being co-ordinated by university academics – these cover four of the five instruments, and include two of the biggest FP6 project budgets in the university. While a few academics are working without a partner (e.g. on most of the SSAs), the average number of partners is 23, with one project (an NoE) having 77 partners.

The university positively welcomes research projects funded by the EU. It considered that it did well in winning projects under FP5, and specifically planned to raise researchers' aspirations to work on FP6 projects. It arranged for mentoring and grant preparation support through European consultants and a strengthened internal European team. By doing this it has recognised the importance of strong project management support and how this can offset some of the disadvantages of working on European projects.

However, the university is concerned about levels of funding on these projects. In particular it is concerned that this will gradually restrict access to key researchers who can increasingly get better funding elsewhere. Whilst the EU is seen as a strong funder of interdisciplinary and collaborative activity, often in areas not addressed by other funders, the institution is concerned that these areas – which cover many of the university's real strengths – could suffer as pressure on financial sustainability increases.

Methodology

1.19 Our work was structured around case studies at these six higher education institutions. The institutions were chosen to represent the main groupings of institutions in the sector with EU research portfolios of different sizes, and were felt to have good systems that could provide us with the information that we needed.

1.20 A number of case study projects were chosen for detailed review at each institution.

1.21 Our interview programme involved discussions with the European officer in research services, pro vice-chancellor (PVC) or head of research, finance director (often delegated to another finance representative or to the PVC research), staff in finance (covering TRAC and costing issues), financial and administrative staff supporting the projects (often based in the faculties) and the principal investigators (PIs) of the selected case study projects. The PIs were often professors, but also included senior research fellows and senior lecturers. In several cases more than one member of the academic research team was involved and we also talked to some project managers (where the institution was the co-ordinator). At one institution we also interviewed the heads of school or faculty for the relevant departments.

1.22 In almost all cases we obtained the information that we needed without serious problems. We found in fact that we could easily cover additional projects in our discussions and took the opportunity to do so.

1.23 We did not interview academics who were not involved in FP6 projects. The summary of benefits we provide therefore represents the views of those already committed to EU work. The benefits might be viewed differently by other academics not so closely involved.

1.24 Our work was helpfully guided and informed by a steering group. A list of members is given in Appendix 1.

Case study projects

1.25 We have identified the costs and funding of 5-10 projects at each institution. Most of these are shown in detail in chapter 3. They all contribute to the financial analysis and extrapolation across the whole institution (chapter 3); and to the descriptions of benefits of the work (chapter 4).

1.26 The case studies were chosen with the aim of covering the three main discipline groups (physical sciences, medicine, and social sciences/humanities). We found that there are few projects which are led by medical or social sciences departments – and there are no arts projects funded under FP6. However, a significant number of projects are multi-disciplinary and have medical or social research elements, or input from arts and humanities, included in the overall consortium work programme (even if not led by our case study institution). Where we discussed a medical department project we found it dealt with technological areas of research, e.g. human genomics, located at the physical sciences end of the research spectrum. Our case studies in medicine did not include any that involved clinical trials. The cost structure for those may differ from the more technological projects that we have studied.

1.27 We also found that many of the physical science projects were desk-based and therefore experienced low direct costs (no consumables costs) and estates costs.

Figure 2: FP6 projects by discipline

Institution:	i	ii	iii	iv	v	vi
All live FP6 projects	118	5	14	42	17	54
% in:						
science	83	60	22	76	94	74
medicine/dentistry	17	0	0	7	0	22
humanities/social science	0	40	78	17	6	4
Case study projects	10	5	7	10	6	7
% in:						
science	100	60	28	90	100	57
medicine/dentistry	0	0	0	0	0	29
humanities/social science	0	40	72	10	0	14

Note: The discipline is indicated by the academic department. In practice, as noted above, medical schools can cover technological (science) projects; similarly, social sciences projects in e.g. law can be covering medical research (e.g. bioethics). Computing has been classified here as a science subject (however, the generic estates rate is often applicable).

1.28 We understand that this profile is not untypical of institutions elsewhere – another institution reported 15% medicine, 6% social sciences/humanities, and the balance in science departments.

The instruments

1.29 We looked at five project types, or instruments, in this study: IP, SSA, STREP, CA and NoE. These are defined in chapter 2.

1.30 The case study projects were planned to cover the range of instruments equally. However, the incidence of some types of instrument (e.g. STREP) is higher in FP6 than for other types, and this has been reflected in the sample size to some extent. As there are fewer CAs and SSAs in FP6 and in our case study institutions, and the work carried out under SSAs in particular varies widely, those considered in our case studies may not necessarily be typical of those instruments.

Figure 3: Numbers of projects, by instrument

Institution	i	ii	iii	iv	v	vi	% of portfolio
STREPS							
live projects	44	2	4	12	4	22	35%
case studies	5	2	2	2	2	1	
CA							

live projects case studies	2 1	1 1	1 1	4 0	1 1	3 1	5%
IP live projects case studies	37 2	2 2	3 3	17 5	5 2	16 2	32%
SSA live projects case studies	4 1	0 0	3 0	4 1	0 0	3 2	6%
NoE live projects case studies	31 1	0 0	3 1	5 2	7 1	10 1	22%
							100%

Note: This figure only shows the live projects (2004/05) for the five named instruments; other FP6 instruments are excluded.

The final column shows the proportion of the projects represented by each instrument, across the six institutions as a whole.

Institutions' roles

1.31 Institutions participating in a FP6 project take one of two roles - co-ordinator or partner (co-ordinator here refers to the administrative function, rather than the role of scientific co-ordinator on a work element).

1.32 The co-ordinating institution acts as lead on the whole project, and, informed by the consortium board or other partnership structures, liaises with the EC on behalf of the partnership. Formal legal contracts in the form of a consortium agreement are in place between the co-ordinating institution and partner institutions and are mandatory for most projects. The co-ordinator (an academic) often has professional, administrative and/or technical support such as a project manager and an accountant (and often a secretary) to support them with the administration and management of the project. (This depends on the size of the project.)

1.33 Partners can have a variety of roles – they can lead one or more work packages (e.g. scientific co-ordinator for a programme of research or lead a workshop); carry out work within a work package team; or simply participate at meetings or workshops. Partners do join (and are occasionally excluded from) projects during their life (although the size of the overall contract budget does not change).

1.34 Some institutions have very few projects which they co-ordinate – most are one of a group of (generally) 10 to 30 partners, depending on the instrument – IPs typically have the largest number of partners and a SSA may have only one.

Figure 4: Projects being co-ordinated

Institution	i	ii	iii	iv	v	vi
% co-ordinated projects of those live	3	20	7	5	6	15
% within case study selection	0	20	0	20	17	30

Note: Excludes Marie Curie projects and any other EU projects outside of the five instruments studied here

1.35 No case study institution acted as co-ordinator for a project under every instrument, but our case study selection did include a co-ordinated project for every instrument except for the NoE.

The grants

1.36 We built up a price or grant for each project under the additional cost model and under the full cost model. Cost models are used to determine the level of grant payable by the EC.

1.37 The FC model allows participants to charge a proportion of all eligible costs, both direct and indirect (using institutions' own indirect/estates cost rates). The proportion depends on the activity being undertaken (e.g. research at 50%, management at 100%).

1.38 The AC model is an alternative model, for use by institutions unable to apply the FC model. It allows participants to charge 100% of additional direct costs, with a flat rate for indirect costs of 20% on these additional direct costs (except sub-contractor costs). This model is currently used by all UK HEIs.

The use of TRAC

1.39 We built up a full economic cost (fEC) of each project using the TRAC costing model. TRAC is the method used by all UK HEIs to report to the UK Government for their costs of Teaching, Research and Other activities (called annual TRAC) and to build up the costs of research projects pre-award, often for pricing purposes (called TRAC full economic costing, or TRAC fEC). TRAC is described in chapter 2 and more completely in Appendix 4.

1.40 The TRAC fEC represents the cost of doing the work, and this cost stays the same for a project irrespective of the cost model that is then used to calculate the price for that project.

1.41 Under the FC model, a system for attributing indirect and estates costs is required. However, prices under the AC model do not use data on indirect and estates costs, and therefore TRAC fEC is not required to calculate the price. HEIs in the UK currently all use the AC model, as, pre-TRAC, they had not been deemed to operate suitably robust methods for determining the price under the default FC model.

1.42 With some small adjustments we believe that TRAC could be used to provide a robust method of calculating the grant under the FC model. Once these

adjustments were formalised this would mean that all HEIs would need to use the FC model (when required by the EC's FP6 guidelines). This would relate to all newly-signed contracts, but would not affect contracts already signed on an AC basis.

1.43 TRAC indirect/estates costs do include some items considered by the EU to be non-eligible. These must be left in the fEC – they represent the real costs of activity, under TRAC – but need to be excluded from the eligible costs used to calculate funding under the FC model. This part of TRAC fEC that could form the basis for calculating an FC grant price is called 'EU-cost' in this report.

1.44 The TRAC fEC costs that are ineligible for funding under the FC model are:

- the cost of capital employed (COCE) including all interest
- the infrastructure adjustment (but leaving in depreciation on historical costs)
- depreciation on revalued assets
- rates
- other indirect taxes (in particular, irrecoverable VAT)
- exchange losses
- provision for bad debts.

1.45 Some of the ineligible costs are readily identifiable but it was difficult for some of our case institutions to estimate the amount of irrecoverable VAT, or to estimate the gross exchange loss, as opposed to the net – we made estimates of the size of these items where needed. In our case study institutions the ineligible costs listed above generally reduced TRAC fEC indirect and estates cost rates by 15-30% (although some figures were much higher – one institution was required to reduce its estates costs by 45%).

1.46 There are a number of requirements for an acceptable EU-cost model which have been raised as questions for TRAC. We believe TRAC satisfies many of these (indirect costs properly apportioned to individual projects, the exclusion of Teaching and postgraduate research (PGR) student costs such as registry, for example). Others are current requirements which are not a matter for TRAC (recording academic time spent during the project for example by timesheets). Chapter 2 gives more detail.

Costing issues

1.47 We are using standard costing assumptions for all projects. These are described in full in Appendix 3. Key assumptions are:

a. Indexation – a midpoint for all projects was established to provide a comparison between grant awarded and actual costs incurred. It was assumed that direct eligible costs had been indexed within the grant, and PI salaries and TRAC indirect and estates rates that match each project's midpoint were applied.

b. Profiling – we built up a project cost for the whole life of the relevant project, whether it was six months or five years (or 18 months if costs were only known for that length of time), to allow any timing changes or peaks and troughs of activity to be smoothed out in the comparisons.

c. PI time – academics have themselves estimated their time input to the projects. In practice, few keep very detailed timesheets (although some do) and estimation methods ranged from 'hours per week' to '(a given) proportion of my time'. All had also estimated a time input when they prepared the original proposal so all had a clear idea of their planned involvement, and could therefore easily consider actual involvement, informed by subsequent project-level timesheets.

d. Indirect cost rates and estates rates – these were calculated and applied according to TRAC guidance, in particular, in relation to PI discipline and location, PGR abatements and institution-specific issues.

e. Level of spending – typically it was assumed that the full grant on each project will be spent (all projects were still 'live' at the time of our work), unless we were specifically told otherwise. Where virement was expected, this was accounted for.

f. Level of recovery – it was assumed that any new eligible costs that arise from the use of an FC cost model rather than the AC model currently in use, will be funded. The exception was the identifiable PI and research assistant (RA) time in management, where it was assumed that the 7% cap had already been reached (so all of the PI's management time had to be allocated to research - or to an activity other than management, depending on the instrument).

g. PGRs – it was assumed that the time input by PIs specifically to supervise PGR thesis preparation and related training was not an eligible cost for the project (but supervision of the PGR student's work on the project was, similar to the time spent by a PI in supervising an RA). It was also assumed that PGR fees are also ineligible and therefore they were not included in costs.

1.48 We have not quantified any changes to budgets to reflect the different cost or activity structure that might have been built in had an FC model, rather than an AC model, been used before the contract was let (although the possibility of such changes was discussed, and mostly discounted, with our case studies). These theoretical changes include the following:

- industrial partners no longer asking HEIs to do the demonstration (however, we have found very little demonstration activity even on AC models)
- training – under FC 100% of training is fundable, so more time might be identifiable as training if this model had been used instead of AC
- an increased charge for core-funded staff time (we have been told that this would just mean less use of non-core-funded staff, with perhaps a slight proportionate increase in salary costs)
- less use of unchargeable PI time (some industrial collaborators are thought to 'load' activities onto HEIs as PI time is not costed)
- more management time (activity) – however, this is really up to the co-ordinator, is constrained by the 7% budget ceiling, and is unlikely to be planned to maximise the income streams.

1.49 We considered that it was unlikely that the overall budget for a project as a whole would have changed pre-contract if the UK HEIs had been using an FC model rather than the AC model. And in our grant calculations we were

already including any additional funding that arose from calculating an FC grant (based on the original fEC) rather than an AC grant. We think it unlikely that a different project structure (e.g. activities carried out by UK HEIs) would have been set in place purely because the FC model could be applied. Therefore, we have not built in any additional funding in the FC grant that might have arisen by carrying out the project differently.

1.50 Academic staff costs need to be estimated on most projects. Most PIs and co-investigators in the UK are core-funded (i.e. not funded from another source such as external research grant or contract income) and therefore their time and cost is not eligible for funding under the AC model. Before the introduction of project costing forms based on TRAC fEC, institutions were not including the time and cost of core-funded staff within their pre-award cost estimates. However, they are part of the TRAC fEC, and are part of the cost that is eligible for funding under the FC model.

1.51 We therefore asked each PI for an estimate of the time they, and their co-investigator (where relevant), will be spending on each project. This estimation was the area requiring the greatest judgement as we built up the TRAC fEC. We know that some institutions biased the case study selection to ensure that we could speak to 'informative' PIs. Irrespective of this, almost every academic could give us an estimate with confidence – many had already included these estimates in the contract documents.

1.52 In some cases we found that the direct cost budgets of some projects (eligible for AC grant) included the time of PIs as they were not core-funded staff. We therefore ensured that we did not double-count them when looking at prices under an FC model. PI time that might be included as a direct cost under AC includes cases where the project is managed by a research centre, whose staff, albeit on permanent contracts, are wholly grant-funded and (very few) cases where some core-funded PI time is included against 'management activity' as they are co-ordinating the project.

Extrapolation across the HEI

1.53 The size of our case study selection has meant that we can extrapolate across all activity for the five instruments in our case study institutions, thus calculating the overall size of costs and recoveries on their projects.

Other work

1.54 In addition to the interviews at case study institutions, we have had useful discussions with the UK Research Office (UKRO), and with the European officers at several other universities.

1.55 We have also discussed the use of TRAC with a UK research organisation that is currently using the FC model and is very aware of TRAC fEC. We comment in chapter 2 on how this work could be taken forward to develop TRAC more formally as an acceptable model for calculating prices for EU work.

2 The five instruments, and the models for determining grant and cost levels

2.1 Chapter 2 provides a description of the five instruments, the AC and FC cost models (used for pricing), and the TRAC model (used for costing).

The instruments

2.2 This section gives a short description of each of the five instruments: [2]

- Integrated Projects (IP)
- Specific Targeted Research Projects (STREPs)
- Networks of Excellence (NoE)
- Co-ordination Actions (CAs)
- Specific Support Actions (SSAs).

2.3 IPs and STREPs are instruments aimed at generating, demonstrating and validating new knowledge.

Integrated Projects (IP)

Integrated Projects aim to generate knowledge and are based on a 'programme' or 'work package' approach addressing different issues. Their research activities may cover the whole research spectrum from basic to applied research. They are often multi-disciplinary. They must involve a partnership of academics and non-academics where appropriate.

They have ambitious objectives, and although the EC considers the optimum size of the partnership for maximum efficiency to be 10-20 participants, in practice they are larger.

There are four types of activity in an IP:

a. **RTD (research and technological development) activities**: all activities directly aimed at creating new knowledge which form the core of the IP. This may include innovation-relating activities, relating to the protection and dissemination of knowledge and promote the exploitation of the results

b. **Demonstration activities**: activities to prove the viability of new technologies that offer a potential economic advantage but which cannot be commercialised directly (e.g. testing prototypes)

c. **Training activities**: advanced training for researchers and other key staff, research managers, industrial executives, and potential users of the knowledge produced within the project

d. **Consortium management activities**:

- overall management and co-ordination issues:
    - technical management of industrial work packages

[2] These descriptions are based largely on a summary of EC text covering the classification and detailed description of the FP6 instruments (October 2004).

- management framework linking together all the project components and maintaining communications with the European Commission.

Depending on the size of the project, a specially constituted management team with dedicated staff covering a range of skills may need to be set up. As such these activities include:

- obtaining audit certificates by each participant
- implementing competitive calls by the consortium for the participation of new partners in accordance with the provision of the contract
- maintenance of the consortium agreement
- obtaining any financial security such as bank guarantees when requested by the Commission
- any other management activities at consortium level not covered by any other activity, such as:

  - co-ordination of the technical activities of the project
  - overall legal, contractual, ethical, financial and administrative management
  - co-ordination of knowledge management and other innovation-related activities
  - overseeing the promotion of gender equality in the project,
  - overseeing science and society issues related to the research activities conducted in the project.

The average EU contribution varies between €4m and €25m per project, depending on the thematic priority, with an average of about €10m. IPs usually last between 36 and 60 months.

Participants must submit an overall implementation plan for the full duration of the project, and a detailed plan for the first 18 months. The implementation plan may be modified and the detailed plan will be updated each year, subject to EC agreement. When contracts are awarded, individual participants may not know their share as it may still be under negotiation within the consortium, and in any case the work programme, and related budget allocation, can be revised annually.

Specific Target Research Projects (STREPs)

STREPs are projects dealing with objective-driven research. They are limited in scope, since they usually focus on a single issue and, as such, are often mono-disciplinary.

They consist of RTD activity and/or a demonstration activity (as described under IP). There is in addition a separate management activity. Over and above the technical management of individual work packages, an appropriate management framework is needed that links together all the project components and maintains communications with the Commission.

Usually, STREPs include fewer activities than IPs and are smaller. The EU considers the optimum size of the partnership to be between six and 15 participants. The EU contribution has varied between €0.8m and €3m per project, depending on the thematic priority, with an average of about €1.9m.

The average duration of STREPs varies between 18 and 36 months. Work programmes are not revised annually (unlike IPs and NoEs).

Networks of Excellence (NoE)
Networks of Excellence are designed to strengthen scientific and technological excellence on a particular research topic by integrating participants' research capabilities in a durable manner at a European level. The aim is to make available the critical mass of resources and expertise needed to provide European leadership and to be a world force in that topic.

Universities and public research centres are generally the main participants in NoEs with industrial partners having a more indirect involvement through the consortium board or steering committee of the NoE. The EC considers the optimum size of the partnership, in order to ensure maximum efficiency, to be between six and 12 participants.

Each NoE has a joint programme of activities which includes three components:

- **Integrating activities, which can include**:
  - discussing and establishing mechanisms for co-ordinating and finally merging the research portfolios of the partners
  - staff exchange schemes
  - complete or partial relocation of staff
  - establishment of shared and mutually accessible research equipment, managerial and research infrastructures, facilities and services
  - exploration of the legal circumstances and possibilities for durable integration
  - setting up of joint supervisory bodies
  - measures for joint public relations, etc.
- **Joint research programme**:
  - jointly executed research, which aims at achieving the purpose of durable integration, e.g. by developing common tools, or at filling gaps in the collective knowledge portfolio of the network. (In addition to this research, participants in a network will pursue their own institutional portfolio, including research in the area covered by the network itself. These research activities are not part of the joint programme of activities.)
- **Activities linked to spreading excellence, which can include**:
  - a joint training programme for researchers and other key staff
  - dissemination and communication activities (including public awareness and understanding of science)
  - networking activities to help transfer knowledge to teams external to the network.

A management framework similar to that of IPs is required.

Funding takes the form of a 'grant for integration', which is a fixed amount to support the joint programme of activities. This is calculated on the basis of

the number of researchers proposed for integration by the participants, multiplied by an annual fixed amount (on a decreasing scale). In all cases, participants are required to ensure that the eligible costs for implementing the joint programme of activities (on the basis of the cost model they apply) are higher than the grant requested, otherwise they will not be able to obtain the payment of this amount in full.

Funding is then made to the consortium up to this grant total on the basis of cost claims. These are based on AC and FC prices.

The EU contribution varies between €5m and €15m per project, depending on the thematic priority, with an average of about €7m. NoEs last between 48 and 60 months, again depending on the thematic priority.

At the start of the contract, the consortium agrees with the EC an overall joint programme of activities for the full duration of the contract, a detailed joint programme of activities for the first 18 months, and an initial list of participants. The detailed joint programme of activities is updated annually and, if necessary, the overall joint programme may also be updated.

When contracts are awarded, individual participants do not know their share as this is subsequently agreed within the consortium.

Co-ordination Actions (CAs)
Both CAs and Specific Support Actions (SSAs, see below) are FP6 instruments aimed at supporting collaboration, co-ordination and other activities.

Co-ordination Actions aim at promoting and supporting the co-ordination, co-operation or networking of a range of research and innovation projects or operators for a specific objective – normally to achieve improved integration and co-ordination of European research for a fixed period of time.

They do not provide support for research and development.

CAs differ from NoEs in that they support co-ordination or co-operation on a specific objective over a defined period of time and there is no requirement for durable integration. They are therefore suited for co-operation to achieve standardisation, define memoranda of understanding or to co-ordinate research initiatives funded from other sources, for example. CAs are normally well adapted for supporting co-operation involving industrial participants and the research community on specific topics for a specified duration.

While the activities that can be performed in a CA – apart from training – are similar to those that can be performed in an SSA, CAs differ from SSAs in that they consist of a coherent set of actions, normally involve more participants and last longer. SSAs are often performed by a single contractor or a smaller number of participants and may concern one-off events.

The EC considers the optimum size of a CA partnership, in order to ensure maximum efficiency, to be between 10 and 30 participants, depending on the thematic priority.

The activities within CAs are:

- **Co-ordination activities**: which are activities intended to complement other framework programme instruments, consisting of a coherent set of components such as:
  - studies, analyses, benchmarking exercises
  - exchanges and dissemination of information and good practice
  - exchanges of personnel
  - organisation of conferences, seminars, meetings
  - setting up of common information systems, setting up of expert groups
  - definition, organisation and management of joint or common initiatives
  - joint memoranda of understanding
  - pre-standardisation and standardisation activities in specific fields
  - establishment of roadmaps for research in specific topics.
- **Training activities:**
  - exchange and dissemination of good practice
  - use of common information systems
  - management of common activities, provided that they are in direct relation with the above co-ordination activities.

  Training related to research and innovation activities that are being co-ordinated is excluded.
- **Management of the consortium:** Over and above the technical management of individual work packages, an appropriate management framework linking all the project components and maintaining communications with the EC is required.

The EU contribution has been between €0.6m and €1.8m per project, depending on the thematic priority, with an average of about €1m. CAs last between 18 and 36 months depending on the thematic priority.

Again there is no annual work programme revision – there is a single fixed budget for the whole project.

Specific Support Actions (SSAs)
Specific Support Actions are aimed at contributing actively to the implementation of the framework programme, the analysis and dissemination of results, or the preparation of future activities with a view to enabling the EC to achieve or define its strategic RTD objectives.

They may also be used to stimulate international co-operation, encourage and facilitate the participation of small to medium-sized enterprises (SMEs), small research teams, newly developed and remote research centres, as well as organisations from the new member states and associated candidate countries in the priority thematic areas, in particular in IPs and NoEs.

Specific Support Actions do not provide funding for research and development.

Specific Support Actions are more limited in scale than Co-ordination Actions. They may be carried out by one single participant, or a group of several partners. The EC considers the optimum size of the partnership, in order to ensure the maximum efficiency, to be one to 15 participants, depending on the thematic priority and the nature of the activity.

While the activities that can be performed in an SSA – apart from training – are the same as those that can be performed in a CA (see above), SSAs differ from CAs in that they are often performed by a single contractor or a smaller number of participants and may concern one-off events. CAs consist of a coherent set of actions, involve more participants and have a longer duration.

Activities within SSAs are:

- **Support activities** such as:
  - organisation of conferences and seminars
  - studies, analyses, benchmarking, mapping exercises
  - dissemination, transfer and take-up of programme results
  - development of research or innovation strategies
  - organisation of high level scientific awards and competitions
  - setting up working groups and expert groups
  - operational support
  - information and communication activities.
- **Management of the consortium:** Over and above the technical management of individual work packages, an appropriate management framework linking all the project components and maintaining communications with the EC is required.

The average EU contribution to SSAs has varied from €0.03m to €0.8m, depending on the thematic priority and averaged about €0.5m. The average duration of an SSA varies from nine to 30 months, depending on the thematic priority.

There is no work programme revision during the course of the project – it is fixed for the duration.

2.4 By way of observation, during the course of our case studies we noticed several characteristics of these FP6 projects, particularly when compared with projects from other funding sources (such as Research Councils):

a. The large number of partners on most of the projects; and the very large size of many projects.

b. The lengthy and time-consuming process of bid preparation on some projects – sometimes involving many trips to partners and to Brussels (or Luxembourg), over several months – followed by a lengthy contract negotiation process. On other projects, a minor partner (who is not co-ordinating a work package) may just be given a budget near the end of the process.

c. The often significant reduction to the requested contract value as it is being negotiated with the EU (this might be due to one of a number of reasons).

d. The method used by many institutions to manage their budgets within exchange rate uncertainty. (Initial sterling budgets are often set at a couple of percentage points above current exchange rates to ensure that if the sterling exchange rate worsens relative to the euro, the overall sterling budget is less likely to be adversely affected.)

e. Partners managing their own budgets. They are paid in euros; co-ordinators do not carry partners' costs or income in their financial statements.

f. HEIs carrying out mainly RTD activities with little demonstration, training or project management (unless they are the project co-ordinator).

g. The influence of the co-ordinator or consortium board on how the budget and activities are allocated. Many institutions find that they have little management budget (permitted up to 7% of the total EU contribution to the budget) allocated to them as that is needed by the co-ordinating organisation for project co-ordination. And the management budget that is allocated to a partner institution is often spent on audit certificates. This is the case even when an institution is scientific co-ordinator of a work package. PI (core-funded staff) time can be included, exceptionally, as a management cost and funded at 120% under the AC model – but as there is generally insufficient room in the budget it is considered an (unfundable) research cost.

The cost models

2.5 Cost models are used to determine the level of reimbursement, or cost-based grant, payable by the EC. Three cost models can be used for the five instruments covered in the study: full cost (FC), additional cost (AC) and full cost flat rate (FCF).

2.6 Other EU programmes use different funding models – other directorates use different schemes and different costing methods and have different reimbursement rates, which will affect cost recovery. However, most of the schemes are based on a principle of shared costs between the EC and the local partner.

2.7 In FP6, the choice of cost model is dependent on the legal identity of the participating organisation, and their accounting practices; it must be used consistently by that organisation, and applied to all relevant contracts.

Full cost (FC)

2.8 The full cost model allows participants to charge a proportion of <u>all</u> eligible costs, both direct and indirect (using the actual indirect cost rate).

2.9 The proportion of costs that is reimbursed is determined by the activity: research and technological development is reimbursed at 50%; demonstration activity is reimbursed at 35%; and training, management and other activities are reimbursed at 100%.

2.10 FC is essentially the default cost model. All types of participant are allowed use this model (the only exception being 'physical persons'), and it is mandatory for industrial participants, with the exception of SMEs.

Additional cost (AC)

2.11 The additional cost model allows participants to charge 100% of additional direct costs, with a flat rate for indirect costs of 20% of these direct costs (except on the costs of any sub-contracted elements).

2.12 Additional direct costs are those that are directly related to the project, and are not already covered by any other sources of funding. In terms of staffing, this means, for example, that salaries of staff who are 'core-funded' are not eligible costs, whereas the salaries of staff paid directly from project funding are eligible. Additional staff may be recruited specifically to work on the project. Alternatively, they may be permanent staff whose contract depends, either fully or partially, on external income; in this case, only the proportion of their salary not covered from any other course can be charged to the project.

2.13 AC is a derivation of FC, and is intended to offer equivalent reimbursement. It can be used by public bodies, private non-commercial/non-profit organisations, and international organisations which do not have an accounting system which allows them to fully identify and calculate direct and indirect costs at project level. It must also be used by physical persons. Under FP6, UK HEIs use the AC model.

2.14 If a participating organisation is able to use the FC (or FCF) model, they must apply this to all new contracts, and cannot subsequently revert to AC.

Full cost flat rate (FCF)

2.15 The full cost flat rate method allows participants to charge a proportion of all direct eligible costs, with a flat rate for indirect costs of 20% of these direct costs (excluding the costs of any sub-contracted elements).

2.16 The proportion of direct costs that is reimbursed is determined by the activity, in a similar manner to the FC model (see activities above).

2.17 Like AC, FCF is a derivation of FC. It can be used by public bodies, private non-commercial/non-profit organisations, and international organisations, as well as by SMEs. Essentially, it treats direct costs as in FC, but indirect costs as in AC. FCF is considered less financially advantageous than both AC and FC and is not considered further in this study.

Co-financing

2.18 The framework programme operates on a shared cost basis, meaning that all participating organisations are required to contribute financially to the project. In the case of participants using the FC model, only a proportion of costs are reimbursed, in line with the principle of co-financing. In the case of participants using AC, however, they can be reimbursed for 100% of additional direct costs, and so the reimbursement rates are not applicable. AC participants make their financial contribution to the project through provision of their own (non-additional) resources, such as core-funded staffing. In FP6 they are required to provide, in their management reports, a 'global estimate' of the project-related costs, thus demonstrating that there is cost sharing.

Eligible costs

2.19 In FP6, any cost that is 'actual', 'economic' and 'necessary', and that is incurred during the project, could be eligible. Consequently, there are no defined eligible cost categories. There is, however, a list of non-eligible items (including: identifiable indirect taxes, interest owed, provisions for future losses or charges, exchange losses, cost of return on capital, current costs, and notional costs and opportunity costs).

2.20 For AC participants, only additional direct costs are eligible, with a flat rate of 20% of these (excluding sub-contracting) as a contribution to indirect costs.

Summary of AC and FC grant calculations

2.21 The maximum grants payable to institutions under the AC and FC cost models differ. The calculations are shown in the following table:

Breakdown of grant calculations

	AC % of eligible direct **additional** costs (direct costs, excl. estates and core-funded staff)	**FC** % of eligible direct and indirect costs (EU-cost)
IP	120% of eligible direct additional costs except subcontracting plus 100% subcontracting	Of EU-cost: 50% RTD, 35% demonstration, 100% training, 100% management
STREP	As above	Of EU-cost: 50% RTD, 35% demonstration, 100% management
NoE	As above (initial contract budget to the consortium as a whole is set on a £/full-time equivalent [FTE] basis)	100% of EU-cost
CA/SSA	As for STREP	120% of direct costs including core-funded staff but excluding estates and subcontracting plus 100% subcontracting

2.22 It can be seen from the above table that for IPs and STREPs institutions will be granted between 35% and 100% of full eligible costs, depending on the activity. For NoEs and CAs/SSAs the recovery of full cost is more likely than for IPs and STREPs.

2.23 However, in some cases the grant awarded on a project is lower than the figure that could be calculated from the rates in the table. This can occur in some NoEs under AC where partners have been persuaded not to include all of their eligible costs when calculating the level of cost reimbursement that they will be requesting from the EC.

Applicability of the cost models

2.24 The FC model is used extensively in the UK by research institutes/establishments, but the AC model is used by all HEIs. If an institution can calculate and apply fully costs in its research projects, it has to do so. This has to be done across the whole institution. In the past no HE

institution in the UK could do so (although some individual departments were close). With TRAC (appropriately developed/amended) there is now a possible opportunity to calculate full costs and for institutions to apply the FC model.

2.25 Each institution's ability to calculate full costs is confirmed by their individual auditors.

2.26 In some cases an additional costing method is used - 'unit fee' (UF). A cost per day for use of a research faculty or piece of equipment is calculated, which when multiplied by actual use (by eligible partners/staff) provides part of the eligible cost. The fee can include the 20% overhead in the AC model.

TRAC

2.27 TRAC is a national UK costing model used in a consistent way by all HEIs. A detailed description of TRAC is provided in Appendix 3.

2.28 TRAC was developed in 1999, and was accepted by the UK Government as a suitably robust method of accounting for public-funded activity in UK higher education. Its implementation was supported by a national steering group, pilot institutions, and a team of national co-ordinators. The requirements, definitions and descriptions of allowable methods are given in a substantial set of TRAC guidance[3]. TRAC was introduced over an initial five-year timescale. It was extended in 2004 to encompass the costing of research projects (government-funded research projects are now funded on the TRAC fEC basis).

2.29 All institutions were required to have fully robust systems in place for 2004/05 reporting, and for use in costing projects funded by UK Research Councils from 1 September 2005. A national quality assurance process was carried out in 2004/05 that ensured these were in place. Institutions are now in a position to extend the use of TRAC to EU projects.

2.30 We believe that TRAC can provide a robust basis for UK HEIs to calculate the eligible costs that could be used to determine the grant under the FC model. Some other research organisations' existing FC models (used to calculate indirect cost rates and FC grants for EU FP6 projects) are not as robust as those that UK HEIs can now prepare under TRAC.

2.31 Review of the FP6 financial guidelines, and discussions with one organisation using the FC model, have led us to conclude that there are some possible implications for TRAC development to ensure it produces eligible costs (EU-cost):

a. Core-funded academics (most PIs and co-investigators) on EC projects may be required to record the time they spend on each project – but they are required to do this by the EC (not TRAC) already.

b. It will be important to dispel any myths about costing (and TRAC), for example:

- indirect costs are by definition not related to a particular project – 'fair and reasonable' and robust methods of apportionment are required

[3] Available at www.jcpsg.ac.uk/guidance/index.htm

- all HEI costs include non-project-specific costs of corporate development, travel, subsistence, professional fees etc, which need to be attributed to activities including research
- (PGR) student costs are in Research indirect costs but are excluded through the denominator (PGR and academic staff FTEs).

c. TRAC is a well-developed and accepted method that will need only slight adjustment (e.g. to exclude specific ineligible costs) before it provides a robust 'eligible cost' for EC pricing. Specifically:

- the time allocation methods used to calculate support time (in indirect costs) are robust
- the cost drivers lead to a fair reflection of research costs.

2.32 In taking this forward we conclude that:

a. It will be important to involve a national firm of auditors who could be asked to confirm that the national TRAC model (amended slightly) is acceptable to produce eligible costs under the FC model.

b. It will be valuable to obtain an understanding of how HEIs are calculating costs for the FC model (this would need to be other European universities, rather than from the UK).

c. As part of this, one or two issues may require specific discussion and agreement. In particular:

- how actual indirect cost rates, encompassing the costs actually incurred within the project lifetime, can be applied to a project in a practical way, recognising the different financial years of a project and an HEI; and the challenges of the 45 working day deadline after project year-end for finalising project costs. (For example, a practical solution might be for actual indirect cost rates relating to year one of FP7 to be calculated, and audited, and then apply them [suitably indexed] to all projects and to all years)
- that accruals – a key principle in universities' accounting methods – can be included
- that some ineligible costs (landfill taxes for example) are immaterial, and do not need to be established and excluded by each HEI.

2.33 We note that the average indirect cost rate used on EU projects does not fully reflect all of the administration burden that accompanies this activity. For example, support costs are higher on EU projects than almost any other research project. This is as a result of the proposal preparation, pre-project negotiations, administrative and financial time contributed throughout the project, internal audit (if external audits are not commissioned), and the targeted support provided by many HEIs to PIs who are new to EU activity. We are not adjusting the indirect cost rate to allow for these, but any critical scrutiny of the indirect cost rate (by EU-approved auditors, for example, to identify costs that should not be there) would need to take into account the understatement of these costs on EU projects when average institutional indirect cost rates are being applied.

2.34 We understand that there is no HEI in the UK operating the FC model. We have talked to one non-HEI research organisation that is operating the FC cost model to find out what costs are excluded. In our view TRAC is a considerably more sophisticated model than the one used in that organisation (although other non-HEI organisations will be operating different models). Whilst TRAC is not currently fully compatible with EU requirements for a FC model, there is scope for a small national study to explore how TRAC can be developed into an EU-cost model that can determine prices under FP7.

3 Findings – cost recovery

3.1 In this chapter we summarise costs, funding and recovery for 47 projects across the six case study institutions. Figures 5 to 10, at the end of this chapter, summarise the results of this analysis. These figures are supported by the detailed costs and funding on each project shown in Appendix 5.

3.2 Figure 5 shows the average cost and funding, under the AC and FC models, for the projects in each institution. This shows that the average recovery under the AC model is 56%, and that is about the same under the FC model, at 59%. However, these averages are significantly affected by the type of instrument, and each institution has a different mix of projects, as we listed in Figure 3 earlier.

3.3 Figure 7 calculates a weighted average. Taking the average recovery for each instrument across the six institutions, and weighting this to reflect the mix of projects across all six, gives a weighted average recovery under the AC model of 57%, and under the FC model 55%.

3.4 Different weighted averages could be calculated, for example to reflect the size of projects, and role of institution (whether it is co-ordinating or not). However, overall we conclude that the average recovery for these instruments is between 55% and 60% for each institution, whether funded on an AC or FC basis.

3.5 The figures labelled (a) in Appendix 5 summarise each project at each institution, reflecting the same data shown in Figure 5.

3.6 The income excludes any HEFCE or Scottish Funding Council (SFC) funding (for example: Quality-Related Funding (QR), the Science Research Infrastructure Fund (SRIF)) which, if available, can be used to contribute to the deficit on this work.

3.7 Figure 5 (and the equivalent figures in Appendix 5) shows that:

- cost recoveries under AC range from 26% to 85% and those under FC range from 39% to 98%
- in some institutions AC prices are on average higher than FC prices, however, the position is reversed in other institutions
- a typical cost of a project is around £450,000 (this will include only a first 18-month budget on some IPs and NoEs). However, the budgets for individual projects studied ranged from £14,000 (project A10) to nearly £3m (project F6)
- there are few direct costs incurred that are not fundable under the AC and FC cost models (those that do arise are because of commitments made by academics to incur costs and not to charge them)
- there are, however, significant other costs that are incurred under TRAC fEC and are not fundable under AC or FC – the ineligible indirect costs make up about 10% of total project costs.

3.8 Figure 6 shows the average costs and recoveries for each instrument. This figure (and those in Appendix 5) shows that:

- the single largest item of cost is RAs, followed closely by indirect costs – each about a third of fEC
- the next largest item is consumables, travel and equipment – 10-20% of fEC
- core-funded staff time (principal investigators) and estates costs are about the same - each is 10% or less of fEC. Not all projects have core-funded staff time (sometimes the PI can be included as a direct cost)
- project manager and PGR costs comprise a very small part of total costs
- sub-contracting costs are generally less than 6% of total costs, but this varies significantly by project. This affects recovery under the AC model as 100% of these costs are funded, but there is no 20% addition for overheads.

3.9 In terms of recovery, on average:

- NoE, SSA and CA projects, using the FC model, show the highest cost recovery levels – this is because the EC's calculation of grant on these projects differs from that on IPs and STREPs
- SSAs also show the highest percentage recovery under the AC model (although the sample size was very small, and the individual projects are very different from each other)
- STREP projects show the lowest recovery levels under both the AC and FC models on average (although in some institutions they did not have the lowest recovery in projects in that institution and some STREP projects showed a comparatively high recovery level).

3.10 A third table, Figure 7, shows average costs of each instrument, by activity. The activity carried out affects funding levels under the FC model in IP and STREP projects (see chapter 2).

3.11 This figure, and those in Appendix 5, shows that:

a. Management costs make up about 5% of project costs, on average. Most projects have some management costs (almost always for audit), but many of these are less than 1% or 2% of project cost. A few projects have significant management costs (15% to 25% and nearly 40% in one case, F2) and these are all co-ordinated projects. If there had been a higher volume of management activity on IP and STREP projects then the FC recovery would have been higher for them.

   We note that all projects would have included project management costs incurred by RAs and/or PIs for their time in the TRAC fEC. However, unless the academic was co-ordinating the project, this would have been included as a research activity for the PI or RA (as there was no room in the management activity category).

b. Although training and demonstration activities make up a 2% and 1% of total costs on average, few projects show these. If there had been a higher component of training activities on IP and STREP projects then recovery under the FC model would have been higher (they are funded at 100%); the opposite would be true of demonstration activities (funded at 35% under the FC model).

c. By far the greatest volume of activity is in RTD, where IP and STREP projects are funded at 50% under the FC model.

3.12 We looked at factors that have driven the different cost profiles shown above (we discuss recoveries at the end of this chapter). By far the most important driver was the projects' scientific needs and the type of activity (that is, research, management, or more collaborative activity) being carried out. This determined the level of RA and non-staff costs (consumables, travel and subsistence etc).

3.13 The needs of the consortium or partnership also help to determine the activities required, but also some of the costs – there are generally downward pressures on the costs that can be included under management, for example, and often budgetary constraints lead to the partnership or the co-ordinator restricting an individual partner's budgets.

3.14 A role in co-ordination can often lead to significant sub-contracting costs (as well as the demands of the project, e.g. for a survey). Sometimes it is expedient for an individual collaborator to put their costs through as a sub-contractor, although this is discouraged by the EC.

3.15 Few projects have PGR student input – it is a matter for the academic whether they wish to, and can, employ a PGR student or an RA. Relative direct costs are very different.

3.16 PI/Co-investigator costs are shown on most projects, except for a small number where the PI is not a core-funded member of staff and their costs are then included as a direct cost within the RA total. PI time as a proportion of total cost does vary, but is still only about 10% of total costs on average. We were told of many examples where this time is higher than 'comparable' Research Council projects, due to the extra administration and time required to work with partners. But, there were other examples where the time was minimised through the employment of a project manager or the support of a research services office and very close working relationships with partners. The impact of PI time increases under TRAC, as full-time-equivalent academic time leads to the attribution of indirect costs and estates costs to the project.

3.17 Indirect costs and estates costs are determined initially by institutional TRAC calculations. We determined their ineligible component by considering relevant entries in financial accounts. Gross indirect costs per academic FTE (before the ineligible cost deduction) varied between £19,000 and £32,000; and laboratory estates costs varied between £8,000 and £12,000 (rate as at 1 September 2005).

3.18 Projects carried out by staff in 'laboratory disciplines' but which do not use laboratory facilities bear generic estates costs. These are usually about 60% of laboratory estates rates. There were no projects carried out entirely 'off campus' (which would not have borne any estates costs at all).

Illustrative projects

3.19 We have included a description of a project under each instrument, below. This helps to illustrate the different instruments. It does not, however, give a complete picture of each instrument, as they vary significantly.

An Integrated Project

In this integrated project the university is one of 55 partners. The project will last four years and started in January 2004. The total value of the project is €75m, of which €551,000 is budgeted for this university.

The project is in engineering and is located in an industry-sponsored training centre within the university which depends upon industry support for its total portfolio of work. The centre has an exclusive arrangement with one UK engineering company and carries out industry-sponsored work exclusively for that company, but within a portfolio balanced with long-term research objectives. This relationship was a key feature in its involvement in this FP6 project.

The PI in this project has been involved in European projects from FP3, and has been PI for 12 different projects. This particular project grew from two separate projects within FP5. The proposal for FP6 work originated as two separate bids for complementary projects using virtual modelling techniques to address specific issues in engineering maintenance. These original bids were rejected by the Commission but with encouragement to bring them together under one, now successful, bid. The two parts of the project were not intended to be competitive, but rather addressed different aspects of the same problem.

Consequently, the successful project is now essentially managed as two projects with, de facto, two lead partners, with the intention of bringing the results together in the closing stages. Both lead partners are major industrial companies, one UK, one French. The main lead partner is French and has well-known capabilities in managing and delivering massive engineering projects.

Preparation of the bid was facilitated through a European-wide engineering industry user group. As a group, the members of the network decide which FP bids to make. As the partnership is so large (which is not untypical of an IP), there was little opportunity for others outside the network to form an alternative or competitive bid – the partners with the key skills were already in the bid, or would not have been quite the right fit for the project proposed. (This may not be the case elsewhere as it does depend on the thematic priority.)

The responsibility of this partner within this project is to explore the use of computer simulation in engine maintenance, and incorporate mechanical, aeronautical and computing skills.

This university's input to the project is clearly ring-fenced within the organisation of the lab. The PI is himself in charge of the lab (where other projects are housed and managed) and his time devoted to the project will average half a day per week over the full four years. The lab itself is managed by a senior lecturer who has no direct involvement in this project, and therefore no direct time implication for the project. One and a half post-doctorate assistants are identifiable to the project for its full duration: the 1.00 being hired particularly for this project, the 0.5 being an existing researcher within the centre also working on other projects. Additionally, a PhD student based in an industry setting (at the UK partner) is working on the project, but on work packages under the direction of the industry partner. The PI is supervising the student, but that supervision time therefore falls outside the elements of the project costed for this purpose.

The full cost implication of this input is expected to be £647,000 over the four-year duration, compared with an allocated AC grant of £293,000, a recovery rate of 45%. Under the FC model, the cost recovery rate would be very similar at 44%.

The management of this project is interesting. For this partner, its involvement is contained within two work packages – one involving three partners, one involving five partners. For management meetings, contact is limited to this small number of partners within the 55 partner consortium. The PI believes that from the point of view of the science, this arrangement works well – ideas can be freely exchanged and objectives achieved. However, given the large number of partners and the perhaps inevitable requirements of the responsible managing multinational, the scale of the project adds a layer of management which comes at a cost both in time and money. In order to meet external reporting requirements, allowing for input from all or many partners, papers and proposals need to be produced weeks in advance of the timetabled dates, causing pressure on the teams involved in the lab, and diverting them away from the science and into fulfilling reporting requirements.

The benefit of this project, as seen by the PI, is self evident. The project fits squarely in the mainstream of the science the centre is established to serve. The work is essentially non competitive, through the nature of the consortium putting together the original bid. It is tightly managed, allowing outputs to be identified within particular work packages, which although

causes some concern in actual reporting, allows a sub-group focus for this university so that it avoids enormous and potentially unproductive full consortia meetings. The nature of the consortium allows for a free exchange of ideas between partners – the university finds itself able to share ideas with French and German colleagues in a way which would compromise its competitive position with UK partner universities.

The project seems to be broadly typical of many other IPs in this industry: the near market focus necessarily engages huge industrial partners with complex management arrangements which can add to reporting requirements. However, as this project illustrates, techniques can then be employed to limit the month-by-month impact of the big consortium, leaving individual partners to focus on the delivery of their packages.

The cost recovery rate of 45% against full economic cost is almost exactly the midpoint of recoveries for the case studies in this university: indirect and estates costs are higher here than in other case study institutions, but are offset by a relatively low level of unfunded PI time, and by a clearly identifiable input of funded RA time.

A STREP

This project is a STREP in the field of virtual systems and commenced in January 2005 with an expected duration of 24 months. This HEI is not the project co-ordinator but is one of 10 partners. The co-ordinator is an SME in Italy. The total budget for the project is €1.9m of which €250,000 is attributable to this university. This university's share of the budget is for RTD activities with no element of demonstration. A small amount is included for consortium management (less than 1% of this institution's total budget).

The project is located in the department of computing science but research for the work packages is carried out in Rome by one researcher, supported by analysis at the home location by the PI and two colleagues. The typical working pattern for the PI involves weekly visits to Italy: 50% of her time is allocated to the project. Her colleagues spend 10% and 30% of their time on the project respectively. As these three researchers are core-funded staff, their time is not funded under the AC model. The project does support two funded research assistants, as well as providing an adequate travel budget. Consumable and equipment needs are said to be low, and are adequately covered.

The employment of the two RAs was delayed by two months at the start of the project for technical reasons (the project needed to be started before authority to spend was granted), but the full two years of spending is expected to be incurred by using an extension period.

The head of department for computing is clear on the benefits of the project: for individual researchers the international opportunities are positive career factors; for the department as a whole, the introduction of different cultural approaches in their working lives is valuable; and for future income streams ─ the university has now been invited to join a consortium responding to the fifth call for funding of FP6.

The total full economic cost is expected to be £397,000 – showing a recovery rate on the AC model of 42%. The FC model would show a recovery of 44%.

The small number of active FP6 projects in this university does not allow a conclusion on whether this is a typical example of the instrument. Compared with other universities in our case studies the recovery rate appears to be a little lower than average despite the relatively low indirect and estates rates at this HEI. This difference against expectations is accounted for by the relatively heavy (unfunded) time input of two senior lecturers and the contribution of a professor.

A Network of Excellence project

This is one of 24 Networks of Excellence in which this university is currently participating. The project is within a specific department of earth sciences and the lead academic involved has a long and active history of participation both in EU and other international co-operative research. The activities are within the sustainable development theme and commenced in April 2004 with five years' funding totalling €6m, of which this HEI takes a €357,000 share. The network involves 13 partners of which three are universities and 10 are national geological surveys – the co-ordinator is one of the national surveys.

The specified activities within the network are approximately 50% joint research activities, 35% integrating activities, with spreading excellence and management activities accounting equally for the balance. The specific breakdown for this university follows the same pattern as the network as a whole.

As for all the cost sharing instruments of the FP6 programme, there is an element of unfunded programmed cost for the network, amounting to €58,000 in staff costs at this institution out of a total identified staff cost of €415,000. Non staff costs are additionally budgeted for €65,000, primarily for travel and subsistence.

The academic leading the network is also PI for an FP6 integrated project (and two FP5 projects) which provide notable synergy for the department's work. The FP6 projects have four or five partners in common and although the work packages within both projects are clearly defined and provide no overlap, the network will draw upon the findings of the IP and the overlap of partners allows for smooth communications and exchange of ideas. The four projects also provide synergy for the individual researchers involved in the department. Although named researchers work on specific projects, the group of projects seems to allow for a core team of researchers across the projects, which provides developmental benefits. Specifically on the NoE, time is provided by the PI (a professor) and another tenured colleague at an average of three-to-four hours per week each; by two post doctorate researchers (at 50% of time each – the other 50% being accounted for by the FP6 IP); and by two PhD students (under the same split arrangement).

The particular field of science involved is one where there are only a limited number of international players and therefore potential collaborators. In taking a decision on whether to join the network the consequences of being left out are as relevant as the advantages of joining in. In international partnerships, where participants are carrying out research of 5* quality, the PI expressed the view that the university is in a strong position by being part of such a network – and his experience of working with the same group of partners continually over the FP programmes seems to confirm his view.

One further benefit for this department is that the network funding allows specifically funded PhD students from any country of origin (unlike Research Council funded programmes). A synergy between the FP6 projects and the department's postgraduate teaching programme was also identified.

The recovery rate for the network under the AC model (the current relevant funding model) is lower than the university's average, at 39%, but only slightly. It is typical in this university for more than one core-funded academic to be involved in large FP6 projects and for both post-doctorate and PhD researchers to be supported, so we would conclude that the structure and recovery rates for this project are broadly typical for this instrument at this university. Were the project to be funded under the FC model, given the 100% recovery of eligible cost for this instrument, the recovery rate would be 84%. This may represent the level of recovery being achieved by the national survey partners for the same work. The academics concerned are well aware of this comparison.

A Co-ordination Action project

This Co-ordination Action has recently started up at this HEI and is its first and only CA, out of a total of five active FP6 projects.

The project addresses an issue within the science and society theme and our case study university is one of 10 partners. The total project has been agreed at a budget of €420,000 of which €35,000 is budgeted for this partner. The project co-ordinator is a university in Italy and all but one of the partners are universities or colleges in Western Europe. The project objective is to produce an ethics roadmap for the future direction of research in this area.

This university is involved in both training and co-ordination activities and has a management budget of 7% identified within the total. These activities have been costed on the basis of a total four months, of which two relate to co-ordination, one to recommendation of standards and one to dissemination.

The project is located within the school of computing at this university and involves only one member of staff, a research fellow. The non staff budget includes €8,550 for travel costs and €1,100 for a sub-contracted audit fee. As the project is at its early stages, it is not yet possible to predict whether the project will finish on budget.

The project already has a protracted negotiation history. The head of department involved in bringing the project to fruition described filling in the 90-page application form as 'an expensive way of getting money'. Even after agreement was reached between the partners and the proposal submitted, 13 months passed before a project start date was agreed. During that time, as the budget is expressed in euros but expenditure committed in sterling, the university faced exposure to exchange rate movements.

The predicted recovery rate (under the AC model) for the project against TRAC fEC is 73%. The potential recovery under the FC model would also be 73% in this instance.

This project is not typical of other projects at the university or of CAs elsewhere. The absence of any PI time, over and above that which is eligible, leads to the AC and FC recoveries being identical. In the other CAs in our case studies, some additional PI time is included, which leads to the FC model showing a higher recovery rate.

The AC and FC recovery rates are also significantly affected by the indirect and estates costs rates used. This university has low rates compared with others, and the recoveries are higher. Where rates are lower, and direct costs are the same or comparable, the fEC appears comparatively lower – the same level of indirect costs as at all of our other case studies would give lower recoveries on both models.

A Specific Support Action project

This project is one of four SSAs at this university out of a total FP6 portfolio of over 100 projects. Like all SSAs it was a small project ─ with a total budget of €85,000 across three partners for a 12-month project period. The lead partner was a university in Italy and the consortium of three was completed by an industry partner from Eastern Europe. This SSA is distinctive for this university in that it falls within the humanities field. The budget for this university was €13,000, exclusively allocated to non staff costs, mainly travel and subsistence.

The purpose of the SSA was to bring together teachers and practitioners from the industry to encourage a change in the approach to dissemination and representation of a particular subject in one media. The programme of events consisted of two meetings involving just the three partners and one larger two-day conference of 60 interested or relevant participants from many organisations.

The time input planned from the PI was 10 days, but in practice it amounted to about 15 days. The overall recovery rate under the AC model on this project was not untypical of others in FP6, at about 60%. However, the PI cost is a comparatively high proportion of the total cost on this small project, and it would have been funded if the FC model had applied, which means that recovery under the FC model would have been over 90%.

The work was, the PI believes, an unqualified success, and acted as a pilot exercise on how the subject might be approached as part of a larger exercise. Tangible changes in the use of material across relevant community users have been seen, directly as a result of the international conference. Contacts from that conference are acting as an informal network for exchange of information but the PI believes that the benefits would now be cemented through a bid for a larger project.

Factors influencing recovery

3.20 We have looked at a number of variables to identify the reasons for different recovery levels under AC and FC.

3.21 Under the AC model, recovery levels are likely to be higher if:

a. Academic staff (PIs and co-investigators) are funded through external grants and contracts, as they can be included in the direct costs eligible for funding at 100% for all of the instruments. (Conversely, if they are core-funded staff, as is the case with most of these projects, they are not

eligible for funding under the AC model, and recovery can be lower than FC.)

This is the case with D5, an IP, with no core-funded staff. It shows an AC recovery of 85%, but a lower FC recovery of only 48%. This does depend on the instrument – D6 is a SSA which also has no core-funded staff, but the grant calculation and therefore the recovery rate is the same under AC and FC for that instrument.

b. There are few or no sub-contracting costs – these do not receive the 20% overhead funding and therefore bring down the overall recovery percentage.

c. There are no direct costs incurred (RAs, travel, audit fees, etc) which are unfunded by the EC.

d. Indirect cost rates and estates cost rates are low - indirect and estates costs do not form part of the AC grant calculation and therefore when lower levels of these costs are charged to the project this increases the calculated recovery percentage.

e. There are more direct non-staff costs relative to staff costs compared to other projects – academic staff costs attract indirect and estates costs, which again reduce the recovery under the AC model.

f. PGR students form part of the staffing complement, as they carry lower levels of indirect and estates costs than RAs or academics, under TRAC.

g. Project management is carried out by an administrator or academic-related member of staff, as indirect and estates costs are not charged to them under TRAC. Whilst this is really a technical matter within TRAC, it can make a significant difference – in D2, if indirect costs and estates costs were applied to project manager time, the AC recovery rate would fall from 72% to 62% and the FC recovery would increase from 54% to 69%. (This assumes the additional costs can be borne within the project budget as a whole.)

h. The project is an SSA, as these activities in these projects often have special characteristics that improve recovery (e.g. they can incorporate a unit fees pricing model).

3.22 Under the FC model, the recovery rate is likely to be higher if:

- the project is an NoE as it is funded at 100% of EU-cost total
- the project is an SSA, as funding available includes PI time at 120% of direct cost
- the project is a CA, as the model is the same as for an SSA with PI time attracting 120% of actual cost. Also, PI time is likely to be a relatively large proportion of cost – project E6, for example, shows an FC recovery of 88%, compared to 63% under AC. This is also the case with F2 (but is not always so - see, for example, F3)
- on IPs and STREPs there are more management or training activities, and few or no demonstration activities. The former are funded at 100% EU-cost, the latter at only 35%

- the ineligible costs in the TRAC fEC indirect costs and estates costs are lower
- there are no unfunded direct costs (e.g. RAs).

3.23 The recovery rate is heavily influenced by the type of instrument:

a. Whilst seemingly funded to the same level under both the AC model and the FC model, CA and SSA projects are more favourably funded under FC as core-funded staff can be included. This was the case in all projects except two (where the two funding models showed the same grant).

b. IP and STREP projects can show a more favourable recovery rate under either AC or FC. This depends on the factors listed in paragraphs 3.21 and 3.22 above. Recovery rates on STREPs ranged from 33% to 72% under the AC model and a narrower range, 39% to 54%, under the FC model. For IPs recovery rates ranged from 26% to 85% under AC, and again a narrower range of 44% to 60% under FC.

c. All NoE projects were significantly better funded under the FC model – with an average recovery of 87% compared to the 53% shown under the AC model. This is due to the 100% EU-cost funding allowed under FC.

3.24 We also found that:

a. Recovery is significantly influenced by the role played by the institution. Figure 8, at the end of this chapter, shows that co-ordinated IP and STREP projects on average show about a 20% higher recovery rate under the AC model than those where the institution is a partner. There are a number of reasons for this: higher direct non-staff costs (with the co-ordinating institution holding the budget for all the consortium's audit costs, or a central stock of materials); higher direct staff costs on project management (often with no indirect or estates costs if the individual is not an RA or academic member of staff) which are funded at 100% of EU-cost, not 50%; and (we are told) more scope to manage one's own budget better.

b. On IP and STREP projects which are not being co-ordinated, recovery under the AC model is not materially affected by the size of project (although academics can find it difficult to spend their budgets on small projects, this would not affect the overall recovery rate for the eventual spending).

IP budgets ranged from £64,000 to £989,000 (most of these were only for the first 18-month period) and we could see no correlation with size and recovery. STREPs ranged in value from £41,000 to £847,000 and again there is no correlation.

The recovery rates hide the academic time pre-contract, and administrative effort put in by finance and research services. This is not attributed as a direct cost of the projects (it generally attributed in the indirect cost rate), but the burden on a smaller project might actually be similar to that of many larger ones.

c. Recovery rates are not materially affected by discipline. Figure 9, at the end of this chapter, gives a breakdown of project by physical sciences and social sciences. The average recovery rate for physical science

projects under the AC model would often be higher because of the relatively higher inclusion of consumables (non staff costs) and RA costs compared to academic costs – with the latter not funded at all, and the former effectively being funded at 120%. However, this is offset slightly by the higher estates costs on those projects.

In fact, half the physical science projects are not actually laboratory based (so they do not require consumables, and are charged a lower, generic, estates rate); and many of the non-lab-based projects (whether in the physical sciences or social sciences) incur significant non staff costs for travel or surveys etc. Overall we found that the recovery on IP and STREP projects in physical science disciplines under the AC model was slightly higher (57%) than in the social sciences (50%).

There were some examples of poor social sciences cost recovery rates. One of the lowest recovery rates we calculated was on a very small STREP project in law (D4 - 32% under AC, 45% under FC). This arose because the amount of PI time put in was equal to the RA input – but of course not fundable under the AC model. This is not untypical of research projects in some social science subjects where there are fewer RAs than in the physical sciences.

The fact that laboratory rather than generic estates rates are being applied, does not, in itself, make a significant difference to recoveries (about 1% or 2% on one engineering project we tested).

d. We saw little correlation between recovery and the six different institutions. Their relative indirect and estates costs would have had the biggest impact.

3.25 The recovery of most projects will have been affected by a number of the factors that we have described above. For example:

An IP that was co-ordinated by one of our case study institutions (F6) accounted for a total budget of €18.5m (this included all costs of the FC partners, whether funded by the EU or not) of which the EU contribution (including a small amount from the Swiss government) was €14.3m. The PI held all of the management budget which amounted to 7% of the EU contribution (€870,000). This was used to fund a project manager, accountant, and secretary, plus legal audit and travel costs. The PI put in 44.5 months of effort on this five-year project of which 30 months was attributable to project management (including co-ordination of work projects). However, none of this could be carried within the 7% limit on the project. As it is funded under the AC model, none of this time is therefore being funded. Nevertheless, as the institution carries significant direct costs in its project management budget (with no FTEs on which indirect costs would be attributed) in addition to the 'normal' levels of RA time and consumables etc in the RTD budgets, the AC grant shows a recovery rate of 74%, relatively high when compared with other projects.

3.26 During our fact-finding interviews we asked PIs for their perception of cost recovery under the AC model. A few had calculated a full cost to inform this – but TRAC fEC had not been rolled out to EU projects at that stage, and the cost assumptions were different. However, those that had done this calculation had a broad understanding of recovery under the AC model that was similar to what we found.

3.27 Resource allocation models (RAMs) dictate how academics feel about their levels of cost recovery. Almost all PIs' perceptions of recovery on these projects was still heavily influenced by the direct cash that this generated through their internal resource allocation models, and by the demands the projects make on their own and their support staff's time. For example, one participant in an NoE was very pleased with the level of recovery (although we calculated this at only 60% under AC). The work involves establishing a web database and there is a travel budget to allow research staff and students to attend summer schools and meet with European colleagues. There are no laboratory costs, and, once the network was operational, the PI is spending very little time on the project, significantly devolving the database work to a software engineer and research assistant (project F1).

3.28 We are not aware of any systematic methods being used to maximise returns (e.g. use of consumables or research data on other projects) nor of any 'double-funding' that is likely to lead to two projects carrying out similar research, for different sponsors. We did not identify any project where there is a specific sponsor co-funding the EC project apart from the EC itself, although we were told of two FP5 projects where a UK government department agreed to co-fund research with the EC (they set up a parallel project, with its own objectives, accessing the same material).

3.29 There were a number of very specific examples of cost sharing:

- a project with occasional input from an RA on another project (their cost was not included as it was fully funded under a separate project) (F2)
- a project with input from self-funded PGR students
- input from 2.5 Wellcome Trust/Medical Research Centre (WT/MRC) funded RAs. The project was based around building a wider research infrastructure to use the resources funded by the WT/MRC. The RAs carried out experiments for registered users. Their time was fully funded so no costs were included in the SSA in question (F3)
- a PI with two FP6 projects where two RAs are each funded at 50% on each
- NoEs, which build on other research that is being carried out, and add value/develop this (through integration with research projects carried out by other partners)
- some co-ordinators using competitive calls on some work projects which attract additional funding. They put some research packages/components out on 'open call' midway through the project and look for a shared direct cost (e.g. F3).

Institutional exposure

3.30 We showed in Figure 7 an overall recovery on TRAC fEC of 57% under the AC model, (on average across the six institutions, weighted by type of instrument). This was about the same under FC (at 55%). These results are almost exactly the same as that displayed by the sector as a whole.[4]

[4] Benchmarking exercises have shown very similar figures for EU activity across the sector as a whole. The most recent of these exercises was on 2003/04 data.

3.31 The deficit on EU activity in the six institutions has been calculated using an average recovery of 57%. We have not sought to reflect institutions' different indirect/estates cost rates in this extrapolation, although it would affect individual institution's results.

3.32 Figure 10, at the end of this chapter, gives these extrapolated figures and shows that the deficit on EU activity in the case study institutions is of the order of £1m to £3.5m, depending on their level of EU activity.

3.33 EU activity is a relatively small part of most of our sample HEIs' research portfolios – five institutions have EU research income at between 6% and 15% of their total research income. HESA data shows that this is a typical pattern in the sector, with the most research-intensive institutions generally having less engagement in EU activity (as a proportion of total research activity), than other institutions.

3.34 The deficits will place a particular burden on smaller institutions that have increased exposure to EU activity (i.e. it is a higher proportion of research activity). One institution has EU research comprising 60% of its research income. Although the volume of EU research may be lower than at other institutions, the administrative costs associated with this are not reduced proportionately, and it would be receiving a lower allocation of QR monies that could be used to help fund the deficit.

Figure 5: Average Costs and Funding (AC and FC models) in each institution

Institution		A	B	C	D	E	F	*total*
no. projects		10	5	7	10	6	9	*47*
AVERAGE TRAC fEC COSTS	£							
direct costs								
included in AC & FC grant calcs		112,171	183,628	173,413	259,026	187,482	401,647	225,185
not included		1,279	0	0	0	6,241	1,285	1,315
PI, estates and indirect costs								
included in FC grant calc		191,426	185,427	150,557	151,154	139,171	230,974	177,035
not included		59,248	31,853	23,378	27,469	40,137	63,714	42,645
total TRAC fEC		364,124	400,908	347,349	437,649	373,031	697,620	446,180
AVERAGE GRANT (1)								
amount funded under AC	£	142,233	219,315	190,759	303,555	221,928	462,533	263,492
amount fundable under FC	£	180,408	198,770	180,558	275,335	189,719	424,982	250,603
RECOVERY OF TRAC fEC (2)								
under AC	%	46%	58%	55%	66%	59%	56%	**56%**
under FC	%	54%	53%	60%	62%	58%	62%	**59%**

(1) calculated as the sum of the individual project AC and FC totals, divided by the total no. of projects in the institution.
(2) calculated as the sum of the individual project recovery percentages, divided by the no. of projects in the institution.
This therefore has not been weighted for type of instrument (see Fig 6), size, discipline or role.
Note that this is not the same as a recovery calculated on the average grant in each institution.

Figure 6: Average costs and funding, by instrument

Instrument		IP	STREP	NoE	CA	SSA	
no. projects		17	15	6	5	4	
Direct costs	£						
RAs		214,005	89,298	76,120	19,179	204,718	
PGRs		6,882	9,035	8,558	0	0	
project manager		5,249	8,351	0	0	0	
consumables, travel, equipment		90,807	24,525	69,596	8,420	100,075	
sub-contracting		38,969	8,319	6,221	366	21,261	
PI/Co-I		59,721	29,044	33,304	12,279	33,893	
Estates		52,948	35,337	27,435	3,315	48,201	
Indirect		190,028	130,792	123,624	20,680	182,675	
AVERAGE TRAC fEC		658,608	334,700	344,857	64,238	590,824	446,180
AVERAGE GRANT (1)							
amount funded under AC	£	412,164	166,168	193,260	33,484	389,462	263,492
amount fundable under FC	£	339,324	151,687	299,429	48,219	424,216	250,603
RECOVERY OF TRAC fEC (2)							
under AC	%	60%	50%	53%	58%	69%	56%
under FC	%	49%	45%	87%	77%	83%	59%
Weighted by volume (3)							
Proportion of AC income	%	49%	32%	11%	1%	7%	100%
Weighted recovery for the	AC						**57%**
case study institutions	FC						**55%**

(1) calculated as the sum of the individual project AC and FC totals, divided by the no. of projects of each type.

(2) calculated as the sum of the individual project recovery percentages, divided by the number of projects of each type. This is not the same as a recovery calculated on the average grant.

(3) the average recovery for all projects studied for each instrument, as shown in the table, weighted by the proportion that each instrument comprises of the six institutions' FP6 portfolio totals.

Figure 7: Average costs by activity

Instrument	IP	STREP	NoE	CA	SSA	
no. projects	17	15	6	5	4	
AVERAGE TRAC fEC £						
Research / Coordination / NoE / Support	583,872	311,673	342,531	52,455	549,757	406,753
Training	25,968	0	0	1,031	0	9,503
Demonstration	5,259	10,638	0	0	0	5,297
Management	43,509	12,389	2,326	10,752	41,067	24,627
TRAC fEC	658,608	334,700	344,857	64,238	590,824	446,180

Figure 8: Impact of role on recovery

Instrument	IP	STREP	NoE	CA	SSA	
no. of projects						
co-ordinator	3	3	0	1	2	9
partner	14	12	6	4	2	38
average recovery of TRAC fEC under AC-grant						
co-ordinator	70%	67%		39%	69%	
partner	57%	46%	53%	62%	69%	
all projects	60%	50%	53%	58%	69%	

Figure 9: Impact of discipline on recovery

	IPs and STREPS		
	in physical sciences[1]	in social sciences	total
number of projects	26	6	32
% of total IPs and STREPs	81%	19%	
%			
lab-based work (lab estates rate used)	46%	0%	
desk-based work (generic estates rate used)	54%	100%	
average recovery of TRAC fEC under AC-grant			
of those using the lab-rate	57%		
of those using the generic rate	57%	50%	
of all IP and STREP projects	57%	50%	56%

[1] the computing science depts (4) have been classified as physical sciences for the purpose of this analysis
a dept of medicine (1) has been classified as physical science

Figure 10: Institutional recovery on EU FP6 activity

Assuming a 57% recovery

possible deficit on 2004/05 EU income, assuming 57% recovery level on all EU activity	£3.2m	£1.5m	£1.2m	£2.2m	£0.9m	£2.6m

4 Findings – disadvantages and benefits

4.1 In this chapter we describe the main disadvantages and benefits of participation in FP6 activity as exemplified by these five instruments. Comments from participants and other information are labelled with the case study institution and project number set out in Appendix 5, for example (D5). Some comments have not been labelled in order to promote the anonymity of the participants.

Disadvantages

4.2 We found no example where the disadvantages were claimed to outweigh all the benefits of participation. This could have been affected by the method of sample selection (projects were selected for us in three of five institutions, and would have naturally been biased towards academics who would be able to speak in an informed way about their projects). We spoke only to academics who were involved with EU projects, and this means that we have not obtained a balanced view of disadvantages or benefits as perceived by the whole academic community. However, our findings can be relied on to give a balanced view of those who are currently involved in FP6 projects of this nature.

Financial recovery

4.3 In chapter 3 we identified the current levels of cost recovery, under the AC model. Overall FP6 projects are showing about a 57% recovery of their full cost. Academics generally had a reasonable knowledge of these cost recovery rates (they compared the 100% of direct costs plus 20% obtainable on EU projects with the 100% of direct costs plus 46% of salaries that has been receivable up to now on Research Council projects)[5]. In some cases the academic did not have a good feel of the financial position – one PI commented that 'EU is financially a problem versus the Research Councils', yet his IP shows a recovery on the AC model of 77% (as he has relatively high RA technician and consumables costs compared to PI time).

4.4 Recovery levels have rarely affected the decision whether to bid for EC funding.

4.5 However, most institutions are now (albeit only recently) aware of the new fEC costing models that have been introduced on Research Council projects; of the increased funding for Research Council projects (directly and through the HE Funding Councils) and for charitable projects (through the HE Funding Councils); and the Treasury's expectation of OGDs to increase their funding levels. Many academics indicated that EC funding would now be

[5] Up to the end of August 2005, Research Councils (and, generally, other government departments, funded research work at direct costs (excluding PI time) plus 46% of the salaries included in these direct costs. From 1 September 2005 the Government put extra money into the system and all research projects for the Research Councils are being funded at 80% of TRAC fEC. It is government policy for other government departments to pay 100% of TRAC fEC except in certain circumstances.

seen as comparatively low, which would become a major disadvantage when considering applying for EC funding. There is as yet very little pressure to do this (we only found one example).

4.6 We have shown how cost recovery on EU funding, under either model, for any instrument, is unlikely to exceed 60% on average. This compares unfavourably with the new Research Council funding levels of 80%, and OGD funding of 100%.[6] There is considerable pressure on the Dual Support funding in HEFCE and SFC - e.g. QR in England, and SRIF - with the significant growth of activity supported under this stream over the past 10 years. There has been some increase in QR to reflect the increase, however, there is still a funding gap in Research Council and OGD research. Work carried out for charities, and work carried out for the EU, are likely to be the areas showing the lowest recovery, by some margin. Charities activity in England is now better supported through a specific HEFCE grant. As institutions plan to achieve sustainability, there could, in time, be financial pressure to reduce work in the area of lowest recovery – the EU.

Bureaucracy

4.7 The participants we interviewed cited bureaucracy as being the main disadvantage to involvement in EU projects. We have already commented on the amount of administration and management required, both from the academic department and central services (whether it be central finance, or the European office). One university is actively positioning itself to only become involved in FP7 if the institution's budget exceeds a substantial (as yet unquantified) figure.

4.8 The ability to absorb the administrative overhead of EU projects is not only dependent on project size but on the number of projects in an institution. Universities with only a handful of projects cannot achieve any 'economies of scale' or afford the investment in acquiring specialist knowledge. The level of administration can be a real barrier to increasing participation, or presumably, initial entry into the sector. It is a significant burden on institutions with relatively small volumes of activity compared to other institutions, but which might still form a major part of their research portfolio.

4.9 From the viewpoint of most individual academics, the effort required to prepare the proposal; negotiate the budget with the co-ordinator, or with the EC; and then to prepare the (often twice-yearly) technical, management and financial reports, was considered a significant burden. There can be a similar burden whether the project is large or small. One project (F7) has a local budget of just under €40,000, within a total project budget of nearly €12m (EU contribution €7.6m) – i.e. 1.26% of the total. It is one of 80 partners. There was considerable change in this budget (originally costed at €30-40,000, it was shaved down to just under €25,000, then the work elements changed, and it nearly doubled in size). 'The effort required to set up and administer this tiny budget takes up a disproportionate amount of time of finance staff.'

[6] Research Councils actually fund 100% on equipment purchases above £50,000, and PGR students at 100% stipends plus tuition fees. OGDs may or may not be providing 100% - some can offer 80%, as a consequence of the work being in the scientific public good.

4.10 'Reporting rules changes on every framework (D3).' An early participant in FP6 found they 'kept on moving the goalposts'. Another, one of the first to report under FP6, 'only had the final guidelines on reporting from Europe after the date the report was due – requiring complete reformatting.' (F2). One university, with a small number of EU projects, is particularly struck with the lack of uniformity in the interpretation of the rules of the framework programmes by the desk officers and co-ordinators. What is acceptable to one manager on one project is not necessarily so to another, and they would make a plea for uniformity of approach.

4.11 Preparing the proposal 'was at least three times more effort than on a Research Council grant' (D2).

4.12 Pre-contract costs can sometimes be significant and are generally ineligible unless all contracts are signed before the project set-up meeting. Lawyers and other advisors have a necessary involvement in consortia agreements. One project being co-ordinated by one of our institutions (D1) required two years to set up and involved meetings all around Europe. A full-time project manager was employed on this prior to the start of the project.

4.13 However, 'where we put in this sort of time we do tend to get funded' (research support officer). Another project for a university with much less EU presence incurred similar time and costs in set-up but with few existing projects the costs had 'nowhere to hide'. European consultants are sometimes employed to assist with preparation of the submissions – they can charge up to 5% of the value of the contract, but are not fundable under the contract.

4.14 We also note that the SFC recognised the 'considerable and otherwise non-recoverable project submission costs' on some of the FP6 projects by providing funding for project proposal and contract negotiation costs on IP and NoE projects.[7] Whilst welcome, the support was limited as it was initially available only for project co-ordinators (it was extended in its second year, 2004/05), could only fund additional costs (i.e. not core-funded staff time or indirect/estates costs) and it was launched fairly late in the FP6 process.

4.15 Post-contract, academics spoke bitterly about audit requirements:

- a challenging 45 day timescale for costing/auditing (often shortened by co-ordinators trying to ensure all returns were made in time)
- changes in requirements from FP5 to FP6
- delays in getting answers
- delays in getting final payment (although this was a hang-over from FP5 projects).

'EC is a fiasco to deal with – just hopeless'. PIs sometimes specifically apportioned a significant amount of their time on project administration, in addition to that spent on research supervision.

4.16 The burden of audit was considered by one institution, with only a few projects, to be 'overwhelming', even after making use of the exemption

[7] Proposal assistance for co-ordination of European Framework Programme 6 research projects (PACER). Scottish Funding Council circular HE/28/04.

provisions. For example, January 2006 will see six audits alone, all by external auditors (the arrangements made in many universities) and this is not untypical of the rest of the year. The burden is not only financial (where project budgets often do not cover the full cost) but also administrative for the academics involved in providing documentation and for the central team in liaison and support.

4.17 The burden of audit arises not only from the requirement for the process but also from the minutiae of the rules. On one current project a €600,000 advance was held up by the Commission over a discrepancy of €6.

4.18 Co-ordination of projects has also led to some unforeseen responsibilities for audit. For example, audit certificates have been received in Italian – not an official language – which then needed to be translated before being acceptable to the Commission. Spanish auditors need to supply notarised documents proving they are eligible to audit. All of these requirements mean that some HEIs positively discourage academics from making proposals to lead projects.

4.19 The problems of burdensome bureaucracy seem to derive from both the co-ordinator, and the meticulous detail in the FP6 guidelines. The latter has probably a lot to do with the requirement to be in line overall with the financial regulations of the EC and the requirements of the court of auditors. We understand that the EC is intending to make large-scale changes under FP7 to improve this, although we note that the benefits from previous improvements have not always been experienced by individual academics or their institutions.

4.20 In any case, in at least some projects the bureaucracy was generated or exacerbated by the project co-ordinator or project manager, by the academic's inexperience of FP6 funding – or, more specifically, by their lack of confidence.

4.21 There was a small minority of academics who felt that EC processes were no more than should be expected on such significant projects or activities with multi-partner involvement. There will naturally be an additional volume of paperwork and communication needed to manage what in many cases are very large research projects (larger than most academics have previously been party to), with numerous partners and complex work packages. Other academics with considerable experience of EC framework funding said that they just coped and 'got on with it'.

4.22 But in most cases there was disquiet about the time and effort spent on administration and bureaucracy: 'the research teams are good people trying to do good work – there appears to be no emphasis on this – we spend all our time coping with delays and finance' (D7).

Exchange rates

4.23 The second most quoted disadvantage related to exchange rates (and obviously only applies to UK institutions and those not in the eurozone). 'If it goes wrong it is difficult to fund salaries.'

4.24 Exchange rate fluctuations are a cause of concern. Institutions require euro bank accounts, methods to academic research against exchange rate losses (when the euro rises against sterling) but also the ability to maximise

spending against a (final) higher sterling budget (when the euro falls against sterling).

4.25 In practice the ability of finance departments to protect against and manage currency fluctuations depends on the size of the portfolio involved. It also depends upon the budgeting techniques used both when the original budget is submitted to the consortium/partners, and when the PI is eventually given the sterling budget (i.e. assuming a slightly disadvantageous exchange rate, or higher staff salaries, to give some leeway for budget cuts, and exchange losses).

4.26 Two distinct exposures arise: the first in budgeting and the second during the contract life. At the point of setting the budget, the prevailing exchange rate (or an estimate thereof) will be used and the budget fixed in the consortium agreement in euros. Movements may then take place between this final budgeting stage and the date of the agreement. During the life of the contract, it is not possible to 'win' on exchange rates (unless one can consistently forecast movements five years in advance) – if the rate moves one way the sterling budget is less, if it moves the other way the sterling budget may be more but it is too late to spend it on research. Practices vary but most institutions seem to fix the euro budget at the start of the project in sterling, sometimes at a conservative exchange rate to cope with risk. Any gain or loss is then borne by the institution or the department.

4.27 Academics who are required to manage to a euro budget find it most difficult. 'The university is not willing to cover the exchange rate risk, so we have to budget for an under-spend unless we ourselves are willing to hold the risk… the budget fluctuates monthly.' 'We are on a loser - we can't benefit from exchange gains as we only find this out after the project is finished and we can't pay retrospective bonuses or do more work at that time.'

4.28 There are also specific problems for a co-ordinator to avoid, which, with experience, are easily achieved through the operation of euro bank accounts. Stories of exchange rate losses on making home currency payments to partners outside the eurozone (e.g. Sweden) appear to have applied to previous FP projects and we saw no examples of this in our FP6 case studies.

4.29 These disadvantages can be (and are being) reduced by such methods as:

- support for academics on costing and budgeting (including treatment of exchange risk)
- the ability to use other funds (e.g. overseas student income) more easily to support these projects, as increased QR and Research Council funding eases the demand to support Research Council projects and an institution's own-funded research out of these other departmental funds.

Cuts to budgets

4.30 We were told of budget slashing by many academics (although not all). Where it does happen it can be extremely frustrating. Whilst some projects had over-egged the budget in the first place (expecting cuts), others had not and had submitted a tight budget. The latter found the subsequent often arbitrary and significant cuts (10% or more) difficult and frustrating to handle – 'doing sensible costing is difficult':

'The budget got cut significantly. The EU introduced project capping during the negotiation. There was no scientific rationale. We had to trim the work package or pull out (D8).'

A co-ordinator on a €2m STREP came second in the rankings during the proposal assessment process, but experienced a '10% gratuitous cut'. This gave her 'extreme difficulties'. The EU said that she should build in work from a previous project but that had already been built into the costings (E2).

4.31 Cuts are exacerbated when the co-ordinator (or the EC desk or project officer) requires the same outputs and deliverables as if the cuts had not taken place.

4.32 We did not detect a pattern here and the experiences were varied: some co-ordinators worked closely with partners to redefine work packages following budget cuts, others did not: some consortia appear to have submitted bids over the limit known to be acceptable, others had worked within the recommended budget ranges. 'It took us two years to put the budget together. Although we had understood from the EU that a large bid would be welcome, we experienced a 55% cut, we had only planned for a 33% reduction so the work packages were cut substantially (D1).'

4.33 There is also a difference between budget costs suggested by project evaluators, and those that take the form of across-the-board 'slashes' to fund more projects. The latter are, we understand, becoming more rare.

4.34 For many of our case studies, the budgeted project closely matched the bid submitted. 'We were cut to the bone before submission…had ambitious targets…told by the EU it was too big… then experienced very little cut post-submission.'

Project management

4.35 A significant set of disadvantages can potentially arise in project management. These can be caused by an inexperienced PI, poor institutional budgeting, poor co-ordinator action or decision-making, a disinterest or change in the European desk officer, and poorly-performing partners.

4.36 We did find a number of very specific 'local' problems on FP6 grants which included:

a. There was confusion as to what the university **contribution to Network of Excellence** projects could comprise of, and the size of this. On one project this led to a PI committing himself (and two staff) to an offer of 67% more time than was fundable – without any core or contract funding to support it. Others interpreted it less generously – some just made sure there was a very small cash contribution evident in the figures; others intended to earmark the core-funded staff time as the university contribution; yet others cited the laboratory infrastructure or work being done from other projects. They all hope that what they are (separately) proposing will be acceptable under the audit scrutiny (the project can be audited at any point up to five years after the end date).

b. **Delays in start dates**. We had a number of examples where contracts were received from the EC with a backdated start date, and with staff to recruit, the real start date was often a further nine months after the date the contract was received. Where organisations have a pool of research

assistants recruitment to a particular project is not a problem, but in the UK, most universities recruit externally for new projects. UK universities are risk-averse and do not wish to recruit without a formal contract. To avoid letting down their partners, PIs often start the work themselves, without an RA, and this increases their cost.

In one project (D9) the proposal was evaluated and passed the first stage approval in May 2004; in June 2004 the contract forms were ready; in April 2005 the institution asked the co-ordinator for an indication of the likely budget (they wanted to advertise for a post but had no signed contract); in April 2005 the EU project officer gave approval and the contract was drawn up. At that time the university agreed to the appointment of an RA if the department would underwrite their cost, so a six-month post was advertised (not the 18 months needed). An appointment was made at the end of May 2005. The PI had already started leading the work package and doing the research designed for the RA. The EC signed the contract at the end of June 2005. In July 2005 the institution received a confirmed budget (altered from the April 2005 version) for the first 18-month period effective from 1 January 2005. At that stage the RA post was extended to the full 18 months.

Even without this sort of delay, UK universities need time to appoint, which does not seem to be built into EU processes. Universities are unwilling and unable to bear the risk of incurring salary costs without a contract. 'The contract was signed in mid-December, with a backdated start date to 1 November, only then we could start recruitment, but it was delayed by Christmas. With advertising, interviews and three months' notice the researcher could only start in July 2005 (D8).'

c. **Exclusion of audit fees from the budget** – and/or lack of understanding of contractual provisions (e.g. the new 'Special Clause 39', which limits requirements for audit certificates). This is probably caused by either poor project co-ordination or individual universities being insufficiently aware of the EU financial regulations and their development.

d. **Late receipt of funding**. After the first upfront tranche of funds, the balance and the following tranche can be dependent upon the acceptance of reports – management, project and financial. This can take many months to process successfully. In practice institutions' cash flows are of a size that permits them to provide the cash cover (unlike many of the SMEs they have as partners).

Potential risk

4.37 There are more significant potential risks. An ineffective working relationship with a co-ordinator or one of the major partners might lead to financial or reputational damage. This is particularly so if a work package is being led by the university, and the poorly-performing partner is associated with that. One professor described his involvement on an IP (his budget is around €1.5m, and he is one of 26 partners). He is experiencing significant problems with inadequate project management structures. The professor feels the risks are high and that only a single table in the contractual documents, describing each work package (with objectives, deliverables, milestones) is insufficient to ensure that the relevant partners carry out their part as required. The co-ordinator now appears to have lost the financial manager for the project and

does not seem interested in respecting the professor's views. He said: 'I have no other leverage than to leave the Network.'

4.38 Most large projects are still only in their second year of operation and these risks and problems are rare (so far at least). However, in a number of projects we were told that a partner had been or was being expelled.

4.39 Many of the project management risks can be countered by having at least some of the following:

- good project management structures (with well defined deliverables and milestones from all partners and useful reporting requirements; accompanied by a clear agreement of the role of the management board and the chair/co-ordinator)
- an academic who is experienced in EC project activity
- excellent administrative and financial support from the university, both pre-award and post-award
- an experienced co-ordinator who is prepared to manage the project 'proportionately'
- a professional project manager (although this is only practical on the larger projects being co-ordinated)
- a good EC desk or project officer - who is interested in the research project; with a workload that allows them to have some personal involvement with each project; and who doesn't change too often – 'we have had three project officers in the 18 months since project inception' (D7)
- good partners who can be trusted to perform – partners with whom the PI has worked before, or who the co-ordinator knows. 'You need to know which partners to avoid (D5).'

4.40 However, not all projects enjoy all of these attributes. And, of course, they should not be sought so single-mindedly that bureaucracy is increased, or the benefits of widening the partner base to 'strangers' are lost.

4.41 Co-ordination of major research projects in itself offers project management challenges (the EC described it to one prospective co-ordinator of a €12m project as 'managing a reasonable-sized company' – he plans to employ a professional management company).

Research work

4.42 The nature of the research work itself seems to be expressed differently by the EC than by the Research Councils, which may itself arise out of the applied nature of the framework programme. This appears to be welcomed by some, and less warmly accepted by others. The higher emphasis on research inputs and specific deliverables was considered a disadvantage by some academics. Others felt that they could easily work within these requirements, and in many cases the projects allowed as much or more flexibility than their Research Council funded work did. The different peer review systems, technical reporting requirements, success rates on applications, and more prescriptive publication processes were seen by some as an advantage, and others as a disadvantage.

4.43 However, we found a few academics who considered that the work had less academic kudos. (We might have found a larger number who believed this had we talked to those without EU projects.) This was not so much caused by lower quality, but because it leads to less valuable outputs in terms of publications, compared to Research Council work (one senior manager commented that 'it was unlikely to lead to the road to Stockholm'; a couple of others felt it was 'not so highly regarded in the RAE'; and one, acting as a project manager of a CA, deplored the time he was not now able to spend on generating research publications). By definition, some of the instruments do not include research, and often lead to less publications – e.g. the SSAs and CAs.

4.44 Sometimes questions as to the value of the work arose because the original 'technical description was weak' or described only very briefly (a couple of paragraphs in inch-thick sets of documents – this left more scope for partners to amend their research plans when their budgets were cut, but it also meant there was no room to put a well argued case, which did not enhance academics' views of its rigour. Others would consider this a benefit.

4.45 But whereas few considered the work of lower quality, one or two did feel the focus of the work was less challenging than other research work they were involved in – 'we're always offered work we are already good at' – which does not give them a chance to move into new areas (but this comes from a department with a spread of work funded from many sources); or 'the work is not as productive as for Research Councils, as it has to fit in with so many partners'.

4.46 A number of academics specifically described the contradiction with the EC wanting to fund 'a package of collective effort by organisations', with universities actually consisting of individual academics wanting funding for their own research work. One academic (co-ordinator of an IP with 19 partners) would really have preferred to pick two or three groups to collaborate with, but had been specifically encouraged to go for a IP, not a STREP (D1).

4.47 Many of these issues will be significantly affected by the new European Research Council (ERC), which is proposed as part of FP7. The ERC will fund frontier research in all areas of science, including social science and humanities (as opposed to the predominately applied research that is funded within the thematic priorities of FP6).

Use of the FC model

4.48 We have not mentioned some of the issues that arise with use of the FC model, as no universities are currently applying this. However, there is some work to be done to make the TRAC fEC model FC-compliant (or, more challengingly, to understand what has to be done to make it compliant). There is a requirement for academics to record their time during the project – some currently do this, some will complete a 'timesheet' when asked. This did not appear to be seen as a disadvantage – although it is debatable how robustly they are being completed.

Benefits

4.49 The benefits of participation in European FP6 activity has been considered so high that three of our case study institutions have recently implemented targeted strategies to increase their participation or to prepare for involvement in FP7. This has included providing support (employing consultants with experience of EC bidding and policy, workshops, project managers, accountants, and European officers who have been based in Brussels) to assist the PIs in dealing with the EC processes (or to relieve them of these responsibilities altogether) that are more onerous than those of most other sponsors.

4.50 The benefits were much more strongly expressed than the disadvantages. Indeed, one PI (F5) was very happy with his STREP (developing medical technologies) – and felt there were no real disadvantages. There was 'not a problem with bureaucracy' – 'there are certainly more reports, which can be a pain, but perhaps Research Councils should have this as it is better project management'. Even the financial recovery has never been a problem - 'we've never really been told'. And he felt that the benefits of this project were considerable.

4.51 Another PI concurred with this (he co-ordinated an €18m 34-partner IP, F6). He felt that bureaucracy is not an issue and that annual reports are just a logistical challenge – but he did have an accountant, project manager and administrative staff funded through the project management budget.

4.52 One PI co-ordinating a STREP (D2) commented that 'cost recovery wouldn't restrict me – the benefits are too great'. His central administration is now making it very clear that the projects must be sustainable in the long term, but central management and fellow principal investigators are not as specific: 'we won't be saying no tomorrow'.

4.53 A PI who is new to European research activity (E4) feels he is 'relatively shielded'. He and his RAs had all worked with the other partners for a long time – 'there are no communication problems' and 'it has all worked very well'. He has no direct involvement with the EU, and he works well with the co-ordinator, as he had on previous joint projects.

4.54 One academic had described several disadvantages (such as low cost recovery, bureaucracy, late start) but said 'despite this, all scientific costs are met and the project works well' (D8).

4.55 Four main types of benefit were described by a significant number of academics, listed as follows, with some further benefits that we also identified.

1. Funding for different types of project

4.56 Many of the projects funded through FP6 would not have been easily funded under any other source.

4.57 **Transnational, multi-disciplinary, size.** Distinguishing features of the projects commonly included some or all of: multi-disciplinary, pan-European, large-scale size. 'We couldn't get this funded in the UK as interdisciplinary work was and is still hard to get from Research Councils – [it's] too large and complex. In the EU it is well-understood and programmes are tailored to

fund it' (PI co-ordinating a STREP which is concerned with the practical application of a piece of interactive software for schools, E2).

4.58 EU projects are 'one order of magnitude bigger than a standard Research Council project' (D5). 'We couldn't do anything like this on our own' (a professor participating in an IP looking at the future of mobile communications, E1).

4.59 **Collaborative activities**, such as those under the Networks of Excellence, SSA and CAs, are very different from normal research activity, and would not easily be funded from schools' own budgets. 'EC funding fosters big transnational collaborations that we just wouldn't get into by other means – big projects, networking, collaborative links.' 'We can attend conferences which support our research strategy but which we couldn't otherwise afford (B3).'

4.60 **Research flexibility.** We were told by a number of academics that 'EU funding is more flexible'. It can, for example, fund 'slightly obscure research areas'. We were told on one project that the Engineering and Physical Sciences Research Council (EPSRC) would not have funded that type of project, which involved the preparation of a primary resource (website) on cloning that would be used for publicity – promoting research to those outside the research community, such as politicians and journalists.

4.61 **Not a closed shop.** FP6 programmes are widely seen to be 'non-elitist' and flexible – the use of a wider pool of reviewers can open up the opportunities to develop science in different ways. (Although some PIs considered that this might also weaken the quality of review in a specific scientific area.) A wider range of institutions is probably able to participate in these collaborative studies than may be the case for some UK national funding schemes. This is particularly true for universities whose strength tends more towards knowledge transfer of applications rather than blue skies research. 'We were introduced to new people (A9).'

4.62 **Industry focus**. FP6 themes typically support projects which have direct industrial, business or user applications. This provides benefits in two separate areas: departments which are already positioned to work closely with industry, such as engineering; have an opportunity to work closely with pan-European industries interested in delivering the technology into the market place; and, departments not typically considered to be close to end users (either industry or consumers) are able to experience first hand the applicability of the tools they are developing – an example might be the interaction of ethics and technology or aspects of social inclusion in policy making. 'The project allows us to keep in touch with industry' (A3); 'the researchers are engaged with service users' (B1).

4.63 **PGR students.** Some academics found EU projects of benefit in funding overseas research students, where maintenance costs can be difficult to fund from UK sources or where restrictions on nationality apply. It can help by 'developing research capability' (E2).

2. A European perspective

4.64 EU funding allows UK academics to experience and understand different ways of thinking, and different cultural aspects of their research. It allows them to test themselves, or to establish their position – this benefits the quality and breadth of work. They are exposed to work in Europe – it is

'important not to be insular' (F5). It allows for cross-fertilisation of ideas, learning from the approaches of others, and encourages the exploration of different dimensions to their research - different governance structures and cultures.

4.65 This then improves research methodology; comparison at a European level can give a real 'novelty' to the research (F7). It can provide a 'sounding board for ideas' (D4) or the means of 'learning new techniques and bringing them back' (D9).

4.66 Working with European partners also allows access to more varied areas of expertise. It can facilitate access to summer schools, and exchanges and teaching programmes for PhD students.

4.67 It can provide an important (often the only) opportunity to work internationally. One participant considered that 'it is a means of moving from national to world-class standard'. Another said 'I needed Europe to make my career' (F5).

3. Collaboration

4.68 It is the main means of working collaboratively, whilst simultaneously being non-competitive.

4.69 It allows access to **up-to-date knowledge**. It provides the opportunity for academics to keep in touch with what is happening in their field of expertise, as well as giving them the opportunity of directly affecting it. It 'gives us some influence on research agenda at the EU level' (D5/6).

4.70 'We must be in on the inside (a PI participating in an €15m IP – D3). 'When you're working at the cutting edge it's important to know what is going on (D5/6).' 'This field (mobile computing) is moving very fast, we need to be in with the leading players. This type of project offers that – although this is not true of all FP6 projects (E1).'

4.71 However, this can also be negative - some feel that to maintain their standing and their insider knowledge, they can't risk being left out. 'We must be seen with them' (E5, an NoE partner) and 'you don't want to be left out when all your competitors are in it' (an NoE, A2). More positive arrangements involve being surrounded with partners that participants have worked with for many years. There are few other opportunities for this (conferences do not offer the same level of linking).

4.72 **Big networks** are established. It 'fosters big collaborations that we wouldn't get into by other means' (D8). The NoE 'brings together people who don't necessarily work with each other – different disciplines and cultures'.

4.73 Individual academics have found that international collaboration affords them a greater opportunity for a **free exchange of ideas** with peers than a necessarily competitive UK collaboration would allow (A5).

4.74 PIs variously commented that it gave them the chance to work with people they had wanted to for some time; to form **new contacts**; to consolidate existing links.

4.75 Academics setting up or providing facilities (e.g. under SSAs) obtained very specific benefits from this collaboration – access to a pool of users, identification of potential users, and collaboration in experiments that they would never otherwise have been involved in. This happens even on some

projects with a small number of partners – one SSA with two partners is demanding large-scale networking, as it will provide a service in the future it must understand the needs of users (F3). 'The benefits from this are very tangible and they're still going on (12 months after the relevant event) (A10).'

4.76 Collaboration and networking are extremely important to any leading researcher. Much of the funding covers these activities, which have to be carried out by any leading researcher, irrespective of what projects will pay for. EU projects provide a source of funding for this 'scholarship' activity which might otherwise have been done (albeit on a smaller perhaps more focused scale, and incurring less management costs) out of a department's own funds or on the back of other projects.

4.77 Having said this, one NoE participant questioned whether the network was actually required, with very low take-up (of exchanges) and use of the database of expertise so far (F1).

4. Providing research capacity

4.78 EU funding provides **money for people and work**. It 'allows us to do the work we want to do' (E4). 'I saw the opportunity and looked for funding (D2).' 'I can take on four new people to look at this area (A1).'

4.79 This is of course as true for Research Council funded projects (and other government departments [OGDs], charities, etc) – but EC funding is in addition to that available from other sponsors. Depending on the nature of the research carried out it is the main source of research funding for some departments (e.g. fisheries science).

4.80 It allows **entry into new fields** – you need a track record with the Research Councils. A participant in 'a strong partnership can use this to extend and develop their research into new areas' (D7). This was repeated by others: one PI who had done work along similar lines before, and had the capacity, 'developed a research portfolio in areas we weren't in before. We built up a good track record that is informing bidding for Research Council work' (F9).

4.81 And funding research, as with Research Council and OGD projects, can **significantly advance science**: 'a breakthrough – very interesting and important information for my area of research – a leap forward in my research effort' (D9). 'It answered a burning question – playing to the expertise of people (in the partnership) who know the answers' (D4).

4.82 We have also identified another key benefit from EU FP6 participation although this was not specifically mentioned to us by many academics ─ risk avoidance.

Risk avoidance

4.83 EU funding forms part of a department's (and HEI's) research portfolio. It reduces dependence on a small group of sponsors.

4.84 However, the converse can also be true. For departments where current European themes match the focus of the research strategy, such as fisheries science or issues around eco sustainability, the EU portfolio can represent a large proportion of activity. It could also be said that the EU funding allows that focus to develop: without it, the department would have few alternative streams of funding to enable it to go in that direction.

4.85 As well as these main benefits, most frequently mentioned to us, there were a number of other benefits described by several of the academics we interviewed. These are more specific to the type of instrument (whether or not it involves research, for example), the type of academic staff (professor, research associate, lecturer), and the particular nature of the project being undertaken. In general, we found SSAs (although our sample was small) were very popular with participating academics while NoEs were generally disliked. The benefits of NoEs were not so strongly expressed however, as one NoE participant (not very enamoured of the project) put it: 'you can get benefit if you are prepared to engage – what you get out is related to your level of engagement' (F1).

4.86 These other benefits, each mentioned by several academics, were as follows.

Research Assessment Exercise (RAE)

4.87 FP6 work provides **research outputs** that can be used for RAE submissions. However, this is affected by the type of project (NoE, SSA and CA projects generally involve less research, relative to similarly-sized Research Council projects, that could lead to publications). In some projects co-authoring arrangements lead to additional opportunities for publication recognition.

4.88 In terms of income and RA time, EU activity has an equivalent impact on **volume drivers** as Research Council activity, in the Funding Councils' Research funding models.

4.89 It provides an **international profile** (not just pan-European). Some consider this important in terms of the RAE. 'If a department is to be considered of international research standing, it is vital that its portfolio includes European research (PVC).' (In practice peer review panels look for work of an international quality rather than an international presence.)

Status/career development

4.90 The association provides participants with **prestige** – it 'raises the profile of the PI'. 'It is important for us to be in the NoE, it gives us an image at a European level (D9).'

4.91 Co-ordinating a project can be a sign of **leading in the field** (or of just getting a project off the ground). Because of this at least some co-ordinators found that it can help to 'consolidate our reputation as the leading research group in this field in Europe' (PI co-ordinating an SSA funding user access to facilities, F4). 'It gave us the opportunity to be a leader in the world in this research field' (PI co-ordinating another SSA in involved the design of a research infrastructure for a medical facility, F3).

4.92 Involvement by a developing researcher can be important to their personal careers. 'It is good for **staff development and training** – junior researchers work daily with senior people in Europe. It is good for research leadership – a 35 year-old can lead a work package (D5/6).' (However, this can be a disadvantage, as project management involvement, or in work packages not involving research, does not lead to high quality publications and therefore is not perceived as enhancing their careers.)

4.93 Invitations to participate can be very highly valued (although this does not work for all participants - partners can be included for political expediency, names of potential participants can be derived from websites, and difficult working relationships can be experienced with some partners – resulting in their expulsion).

'Best of the best'

4.94 This work allows links with the key players in an academic's research field. One academic (a senior lecturer) referred it to 'working with the leading lights' (D4); another 'the opportunity to participate in work with the best people in the field' (D5/6).

Opening up other opportunities

4.95 The relationships and ideas developed through EU projects (for example in FP5) have provided several participants with links and working arrangements with partners that have led directly to **other projects, and collaborative arrangements** such as workshops and conferences. Some of the subsequent projects can be funded at full cost. 'We have been actively exploring joint research opportunities (D10).' 'I see the SSA as a pilot exercise for putting together a bigger bid (A10).'

4.96 EC projects have directly led to the preparation of stronger, successful, **Research Council proposals**. 'We submitted a bid to a Research Council on the basis of knowledge acquired under this project (D5).'

4.97 It is unlikely that EC **research infrastructure** funding (significant in some universities) would be granted without signs of active European research activity. Work with specific EU partners or eligible states allows access to project funds which would simply not be available to a UK institution alone (e.g. to UN, WHO and UNESCO projects).

4.98 As we have described, those commissioned to promote their facilities, materials, or software, will benefit from the **exposure to users**: 'NoE participation gives us the chance to promote this (computer) programme (D10).'

4.99 The personnel profiles of many of the departments we visited are multicultural and multilingual, demonstrating **increasing opportunities and mobility between institutions** in Europe, probably both as a result of, and as a response to, successful participation on EC projects. Certainly FP6 projects can be very flexible and can support European PGR students that Research Council funding cannot support to the same extent. (Marie Curie schemes of course also contribute significantly to this, but they are not covered in this study.)

4.100 It is not possible to quantify whether these opportunities will actually be exploited in all cases, but we found several examples where new projects were actively under discussion. Again, this is not the case with all projects – one NoE participant (F1) was sceptical – it is 'yet to be proven that this Network makes a difference'. Most are very positive, however, and even in the project we just mentioned, the grand vision is to set up a new research institute and a European masters programme.

Continuation of previous EC research

4.101 A number of the projects that we covered in our case studies were a direct follow-on from previous FP5 (and often earlier FPs) research activity. We saw one example of an FP6 STREP on a subject which has been continuously funded from FP3. The partners in the group had changed over time according to the focus needs, with about 30% of the original FP3 partners still being involved at the FP6 stage (B2).

Success rates of bids

4.102 Many academics believe that the success rates on bids for FP6 projects are higher than on (for example) Research Council project applications. Several PIs we talked to shared the view that once they were asked to participate in a response to a call for proposals, it was very likely the project would be accepted in some form (A1, A5). 'We have a chance as long as it complies with the political agenda (F6).'

4.103 The reason for this seems to be that as there are only a few accepted leaders in most fields of activity (either large national research institutions or major European companies) and when a few have already gathered together to form a proposal it is unlikely that a 'competitive' bid could gather the same level of acknowledged expertise. PIs are therefore willing to spend a considerable amount of time preparing the bid in the knowledge that the chances of gaining acceptance are high.

4.104 'We were approached as we were putting in an expression of interest in a similar area. The co-ordinator was aggressively mopping up opposing bids' (F1, a PI on an NoE, responsible for setting up a database of expertise and encouraging the exchange of researchers between partners to explore the use of their expertise).

Other benefits

4.105 A range of other benefits were described which relate to one or a small number of the projects we studied:

a. The direct costs in some project management budgets cover accountancy, secretarial or administrative support, which helps to relieve administrative pressures on the department in general.

b. The flexibility (of a Network of Excellence project) which can provide bridging funding for RAs.

c. Funding to provide access to a specific set of facilities that helped to ensure their continued availability for other uses.

d. Design of research infrastructure for a medical facility. SSAs can be very unusual. One was 'wonderful funding' – a design study grant for research infrastructure. It provided funding for three years to find out the best way of carrying out research in human development – identifying what is needed and the best way of putting together research infrastructure for the future (that is, team, network, materials). The project allowed both 'thinking time, and time to design' (co-ordinator of a two partner SSA, who holds a national collection of materials, funded by the Wellcome Trust and MRC, unique in its availability to the scientific community). The co-

ordinator considered this SSA was ‘absolutely linked to the EU strategy of integrating activities to create a critical mass’ (F3).

e. It can give ‘access to data from users of our facilities’ (F4, an SSA).

f. It is a ‘convenient vehicle for extension to obtain more data for own purposes’ (F8).

g. Useful for ‘bridging’ in a post-doctorate researcher’s career when he was between other longer research projects.

h. A translation of the research activities into the taught postgraduate programme (A1).

i. ‘The ability to use experiences on user engagement in illustrating aspects of the undergraduate curriculum of the school’ (B1).

Overview

4.106 There are some significant disadvantages to carrying out EU FP6 work compared to other projects – in particular financial recovery (especially now with the higher Research Council returns), and more importantly to academics, the bureaucracy. Administrative burdens also include problems with exchange rates, late start dates, late receipt of funding, and project management, including the risk associated with poorly performing partners or co-ordinator.

4.107 Despite the financial recovery and the bureaucracy, there seems an almost universal acceptance of the significant benefits of participating in FP6 activity. This is notwithstanding the much more petty administrative disadvantages that many find irksome and time-wasting. Universities are taking proactive steps to counter these, with central European services offices and other support, however, they remain a burden. One institution is now planning to avoid non-mainstream proposals and those below a certain level of participation: ‘a burdensome way of earning €35,000’.

5 The future

5.1 This study has gathered information on financial recovery, and the benefits and disadvantages of five instruments funded through FP6. At the time of carrying out this review there was considerable uncertainty over the content of FP7, the size of the budget, and the legal and financial rules (including the cost models). However, the basic proposals are now available, and there are several conclusions we can draw from our work that could help to inform the participation of UK higher education institutions in future FP activities.

5.2 New policies and programmes are likely to emerge, with the creation of the FP7, including the ERC. The proposed ERC will offer opportunities for frontier research which will be attractive to many universities with particular research focus and strengths. Researchers in the humanities may now have significantly better opportunities to access EU funding. The proposed rules of participation for the ERC state that frontier research should be funded up to 100% of eligible costs. However, the size of the budget available in this area is still very much under discussion.

5.3 Draft documents and discussions indicate that there will be significant continuity between FP6 and FP7 processes and requirements. The instruments are likely to look similar. The EC will try to make the FP7 simpler, although this will be a hard task, and is unlikely to bring significant benefits to HEIs. It would be of more immediate benefit for institutions and academics to improve their own project management procedures to overcome many of the disadvantages experienced in these types of projects.

5.4 A key message **to institutions** from this study is for them to consider how to provide a good level of support to their academics to ensure that:

- their income levels are maximised (within the rules) and eligible costs are all recovered (such as audit)
- challenges such as exchange rates, late start dates and administrative loads are handled well
- academics can apply or actively draw upon good project management skills on these projects - both pre-award and post-award - particularly if they are a co-ordinator, or leading a work package.

5.5 This support should be developed in sufficient time so that academics new to EU projects can access an experienced source of support in advance of bidding for FP7 projects. To be fully effective the support should cover the identification of opportunities, the preparation of proposals and project administration.

5.6 There are implications for this for institutions who are ‘euro-naïve’, and for smaller institutions, where the support requirements for academics still exist, although the number of projects may be lower.

5.7 At this point we note the particular problems that exist for UK academics because they are operating outside the eurozone – they are not able to take up all of the funding that is made available to them ─ and are doing less research as a result ─ because of the financial risks that they have to bear. The fact that this provides a burden and a cost to institutions is an important

message from this report **for Government**, particularly if research in Europe is to grow.

5.8 The proposal for the FP7 rules of participation have just been published by the EC (although it will be some months before they are finally agreed, and there may be considerable revision). The cost models (AC, FC, FCF) will disappear in name, but what is currently being proposed does display similar characteristics – a differentiated cost system for different organisations and accounting practices. It is proposed that the reimbursement rates will also change.

5.9 The messages about cost recoveries from our case studies could therefore be used to inform future recoveries for many of the projects under FP7. The EC financial rules are likely to indicate that a reimbursement of part of the eligible costs (including indirect and estates costs) is still the default option on many projects, and that the only alternative to full costs is additional direct costs plus a flat rate percentage contribution to overheads. If this flat rate is disadvantageous (i.e. the recovery is lower than that for the default option) then there will be financial benefits for institutions to calculate their full costs in a way that is acceptable for EC projects.

5.10 In practice it will remain up to each institution's auditors to determine which cost approach is to be used: including establishing whether an institution should charge actual or flat-rate indirect costs. TRAC could be used to provide the actual indirect costs, but it will have to be developed in certain ways – these should be fairly easily implemented if the auditors take a fair and reasonable view on materiality and methods (exclusion of ineligible costs, apportionments, inclusion of actual indirect costs). It would help institutions if there was a national approach to developing TRAC across the sector so that auditors could easily (and consistently) verify the resulting costs as EU-eligible. We understand that the OST is looking at this.

5.11 Currently, in most institutions, the overall level of funding on FP6 projects funded through the five instruments studied here is lower than the new rates being awarded by the Research Councils and OGDs in the UK. This varies significantly by project (some individual projects show higher levels of recovery). If the equivalent of the FC model was to be used instead of the AC model, at current reimbursement rates, the overall level of funding is not likely to improve. If the flat-rate indirect cost rates were used, and these notional costs were then lower than an institution's own rates, the funding would reduce.

5.12 These levels of recovery reflect the cost-sharing policy adopted by the EU. Institutions have to plan and budget for this level of recovery. However, there is considerable disquiet in the sector about the relatively low level of funding of EC projects. The 'business' management style emerging in some universities will put pressure on academics wishing to bid for European projects. However, it has to be said that:

a. The (non-financial) benefits from participation in this work, despite the significant disadvantages, are almost overwhelming for many academics (although not all).

b. The rate of recovery depends on the project, and this will continue under FP7. The current recovery on some EC projects under FP6 is as good as under the old Research Council rates, and sometimes as good as the new

Research Council rates – this provides mixed messages to academics and senior management about the disadvantages of participation.

c. Institutional systems that properly calculate and record recoveries on research activities are in their infancy, and European projects (with their particular complexity of exchange rates and, often, moving budgets) are unlikely to be a high priority as TRAC fEC costing systems continue to be rolled out.

d. Additional funding in departments from increased QR and Research Council income will help to create an atmosphere of 'being better off' – 'If EC project deficits could somehow be borne before, why reduce involvement now?' (PVC Research, Institution E).

e. It will take time for institutions fully to understand fEC and its implications for sustainability, let alone implementing action that will ensure the latter. This will in part depend on future monitoring and actions by Government and the HE Funding Councils.

f. Even with increasing attention being paid to sustainability metrics and performance indicators, EU activity is a relatively small part of the research portfolio of most institutions, and is unlikely to be perceived as a key threat to institutions' sustainability – many other areas would merit critical attention first.

g. Some institutions still permit their academics to bid for work without critical review of costs/recovery, or without reference to any strategic research portfolio (although this is changing); and there is often little central management or department interaction in academic bidding. 'The EC allows academics to apply without institutional authority (signatures) – who would then turn down a successful bid?' (research services officer, Institution D).

h. Institutional resource allocation models (which dictate academic departments' income, contribution targets and levels of spending) rarely reflect sustainability and full economic costing and may give perverse incentives – although this too is gradually changing in many institutions. The full financial pressures on researchers to improve cost recovery (often best expressed through incentives to academics) are not yet there.

5.13 These factors mean that whilst there was disquiet about cost recovery in many quarters, some academics are currently content with the current levels, others do not feel it would make a difference to their participation, and senior management has generally not been sufficiently concerned to wish specifically to restrict participation. Whilst some senior managers are increasingly encouraging a more critical cost/benefit review of prospective activities, others have specifically encouraged growth in European research activity.

5.14 Therefore, whilst the poor cost recovery rates on EC projects may lead to disengagement by some leading researchers, this is unlikely to be significant over the next few years – and may actually be counterbalanced by increased participation in the (more interesting to some) blue skies areas of research with the new European Research Council, or new potential opportunities in humanities. However, this will be patchy. We were told by some academics in more commercially-minded research institutes that if their comparatively low funding continues – or their currently reasonable level of funding falls -

they will now start to seriously to consider the extent of their involvement in EC projects. 'It is unlikely to stop – but will be reduced.'

5.15 For this to happen more widely, three things will need to be happening in higher education institutions:

a. Sustainability indicators start to affect institutional behaviour significantly. The sustainability trigger metrics have only just been issued by the higher education Funding Councils, and may not affect behaviour for many years. However, the review just announced on the future of SRIF, and the continued pressure on QR and Teaching funding may apply more pressure. We note though that institutional behaviour is unlikely significantly to change before the 2007 RAE submissions.

b. Senior management think about EU recovery rates, in particular, as a serious threat to their sustainability. It could happen if EU projects make up a significant part of a university's, or a department's, research portfolio, and/or if EU recovery rates under FP7 worsen.

c. Institutions' management processes facilitate and encourage academics to take cost recovery into account as they bid for work – through the resource allocation model and other processes.

5.16 Another key message **to institutions** is therefore to consider the impact of recovery rates on the sustainability of their research portfolio, and to set in place processes that, whilst acknowledging the benefits of this activity, help academics to understand the real financial outcome of their work. Financial recovery should never, however, drive the institution's or academic's decision whether to participate or not - this should be considered as one factor along with the academic and other criteria.

5.17 However, institutional acceptance of poor recovery rates hides underlying problems – the threat that this poses to the long-term support for a sustainable research infrastructure that will allow European research to be carried out at an international level.

5.18 We note that much of the deficit not funded by the EU arises from the specific exclusion from their contribution to some of the TRAC fEC costs that aim to support sustainability – e.g. the infrastructure adjustment and the COCE adjustment.

5.19 Many academics work longer hours to make up the deficit in their portfolios. They are therefore not as able to invest time in generating ideas and data to allow them to propose their next piece of (blue skies) research. As a result their competitiveness can be threatened. As a group of pro vice-chancellors for research have commented: 'Funding and conditions must be such that there is no disincentive for the best researchers to participate in FP7 and that public institutions have the resource base which will be necessary to underpin their future existence, and thus ensure the European research base is still flourishing for future framework programmes and able to compete with North America and the Pacific rim.'

5.20 We note that the increased funding made to the Research Councils (both directly and through the Funding Councils), required from OGDs, and made on charitable activity in England (through HEFCE) will improve the recoveries on those areas of research. This will start to highlight the levels of deficits on

EU activity, and may start to focus academic and institutional behaviour in a way that would not previously have happened.

5.21 What is likely is that, probably post-RAE (2007), academics and institutional managers will become aware of recovery and sustainability issues, and will be starting to look more critically at the choices they are making. The EU will be increasingly seen as the 'most shakiest of all funding streams' (D5). Areas heavily dependent on EU funding will diversify. Numbers of projects may be reduced. Academics will become more choosy. They will tighten up their cost/benefit analysis and will start saying 'no' to some, although this will be culturally difficult. 'We would just have occasional people sitting on high-level groups; or there would be very little involvement of senior researchers in the work being undertaken' (D5).

5.22 And this is more likely to happen if the average recovery rate declines, because of different cost models or other reasons: 'if we no longer get 80% for our EU work then we will have to retrench' (this from the head of a unit that has no core-funded staff, and who currently enjoys higher levels of recovery under AC as a result).

5.23 A second key message **to Government** is therefore to consider the implication of the EU cost-sharing requirements on institutional sustainability for the longer term.

Appendix 1 Steering group

Members of the steering group for the project were:

Chris Hale	Policy Advisor	Universities UK
Davina Blake	Policy Officer	Universities UK
Paul Hubbard	Head of Research Policy	HEFCE
Suzanne Wilson	Research Policy Officer	HEFCE
Amanda Crowfoot	Director	UK Research Office
Ian Carter	Director of Research	University of Liverpool
Roger Louth	Director of Policy and Finance	OST
Jon Gorringe	Director of Finance	University of Edinburgh

Appendix 2 Terminology and abbreviations

AC	Additional cost model for determining eligible project costs.
AC grant	The grant awarded to the partner in the project using the additional cost model for determining eligible costs.
Core-funded	Time/academics deemed to be funded through the base line grant of the university i.e. those not dependent entirely or partially on specific projects or grants.
Direct additional costs	These are costs directly relating to the project. They are the same as directly incurred costs in TRAC fEC. They are 'direct costs' (see below) excluding the core-funded staff time; and form the basis of the AC grant calculation.
Direct costs	The costs associated specifically with one project – these are almost the same as 'additional costs' or directly incurred costs (under TRAC fEC); but also include core-funded academic staff costs. These form the basis of the FC grant calculation under the CA and SSA instruments.
Directly allocated costs	Those costs are allocated to one project using robust methods specified through TRAC. They are mainly PI and co-investigator time and estates charges. It is assumed in this study that the methods used for the allocation of PI cost meet the criteria required for classification of 'direct cost'. However, it is assumed that the methods used for the allocation of estates costs do not.
Eligible costs	Those costs which are allowed to be charged against grant to budgets for FP6 projects. Under AC, these are generally the same as the AC grant. Under FC the FC grant is a percentage of the eligible costs.
EU contribution	The grant or budget for the project which will equal either the AC grant or the FC grant, depending on the model applicable.
EU/EC	European Union (the union of member states); European Commission or the Commission (the organisation managing the EU).
EU-cost	European Union-cost. This is the same as eligible costs under the FC model. It is a lower figure than TRAC fEC as it excludes indirect costs such as interest, cost of capital employed and irrecoverable VAT; and estates costs such as the infrastructure adjustment and indirect taxes such as rates.

FC	Full cost model for determining eligible costs.
FCF	Full cost flat rate model for determining eligible costs.
FC grant	The grant that could potentially be awarded to the partner in the project using the full cost model for determining eligible costs.
FP6 (also FP5 etc)	Framework Programme 6
Indirect costs	Costs which, along with estates costs, cannot be allocated directly to any single project and must be attributed to Teaching, Research and Other activities. Robust methods for doing this are specified under TRAC. These costs are defined under TRAC to be Support costs in academic departments, the administration and management time of academics, central service department costs, and a Cost of Capital Employed (COCE). These form the indirect cost rates, which are prepared in accordance with TRAC guidance and used to attribute indirect costs to projects on the basis of a £/academic full time equivalent number of staff (£/FTE).
HEFCE	Higher Education Funding Council for England
HEI	Higher education institution
OGD	Other Government Department
OST	Office of Science and Technology
PGR	Postgraduate research
PI/Co-I	Principal Investigator and co-investigator – used in the context of time, applies to the number of hours (converted in the costing model to FTE) spent by the principal investigator and co-investigators on the project. Most PI and Co-Is are core-funded.
QR	Quality-related research funding. It is allocated according to research quality and the amount of research carried out.
RA	Research assistant
RTD	Research and technological development One type of activity within certain instruments, other examples being – demonstration, training, co-ordination, consortium management
SME	Small to medium-sized enterprise
SRIF	Science Research Investment Fund
TRAC fEC	Transparent Approach to Costing: full economic cost

Types of instrument: IP STREP CA SSA NoE	Project types within FP6, namely: Integrated Project Specific Targeted Research Project Co-ordination Action Specific Support Action Network of Excellence
UF	Unit fee. A cost model which uses a unit price (e.g. daily usage fee) for a facility, which, when multiplied by the number of users, gives the eligible costs.

Appendix 3 Costing issues

This appendix describes the standard costing assumptions used for all projects in this study.

Indexation

- We established the mid-year of each project, and applied PI salary rates, and indirect/estates cost rates, at prices that prevailed that year. These were then assumed to be the average rates for the project, appropriately recognising inflation. The rates themselves were based on those at 1 August 2005 (for 2005/06 PI costs) and 1 September 2005 (for 2006 indirect/estates costs).
- Indexation was assumed to be both incurred and an eligible cost under both AC and FC models. All direct costs (included in the AC budgets) were assumed to have appropriately included inflation.

Profiling

- The recovery percentages were calculated on the latest budget of whole programme costs (unless there were known changes to this).
- Where we needed to refer to annual figures in our calculations, we divided the programme length by the number of years (we did not profile costs more precisely).

PI time estimates

- PI time was, where possible, built up through estimates of the time required for the separate activities (weekly supervision, annual/mid-project/end-project reports, meetings). We used 1,650/hours per year to provide an hourly cost for each hour. However, most PIs estimated their time in terms of numbers of days per week or per year, or as a percentage of their total available time. Any of these methods can be used under TRAC fEC.

Application of indirect and estates cost rates

- If the research is being carried out off campus, but the project still retains a proportion of campus time, then we applied all of the relevant institutional estates rates. However, if the project is in a laboratory/clinical department but is not using laboratory facilities, then we applied the desk/generic estates rate. Under all circumstances we included indirect costs. This is all following TRAC guidance.
- When applying the rates to the time of RAs who are also PGR students, they were treated as RAs for this project (i.e. we did not apply the abated PGR indirect/estates cost rates to their time).
- If there is an external audit on the project, or an additional secretary or project manager included in the budget costs, we assumed this is all additional to the costs in the indirect cost total, and we did not abate the latter. (This leads to a slight overstatement, but not materially so, and more than offset by the average understatement on administrative time.)

- Where the project manager is a researcher and is also carrying out work under one of the work packages on the project, then we applied indirect and estates costs to all of their time (including the project management element). If however they are not employed by the university in a research capacity, and only act as project manager, then no indirect/estates costs were applied to their time (it is deemed to be administration, not research).
- We assumed that the software engineers/designers are researchers (although they may not be classified as such in the university payroll).
- If the work packages only involve web design/software development then non-laboratory or generic estates rates were applied to the project, even if the work is being carried out by staff based in a laboratory department.
- Institutions' own indirect and estates rates were applied, rather than sector averages, so there is a variation between the values used. The only exception is for Institution B, where local circumstances and campus restructuring have led to anomalous results. For this institution, the average for the relevant group for benchmarking was used.

Levels of actual spend

- We confirmed with the PI that the actual direct project costs (excluding PI time) are likely to equal the budget. We reflected any expected virement (between staff and non-staff direct costs, or management costs) as this affects recovery under the FC model, and the fEC.
- We used the institution's own assumptions on exchange rates to calculate a sterling budget, and did not assume any under-spending (a possibility as more conservative exchange rates are commonly used to set sterling budgets).
- If work is being done by RAs who are not funded on the project, but whose time is being fully charged to other projects, then none of their time or cost was charged to the EU project.

Levels of recovery

- Any increase in the eligible cost (which might have been identified if the FC model had been applied pre-contract, over that estimated for the AC model) was assumed to be fundable. In practice, either the activities could have been changed, or the budget for the original set of activities might not actually have increased – leading to a possible overspend (and so a worse level of under-recovery).
- We assumed that CAs and SSAs (which fund 120% of direct costs under the FC model) would show higher recovery under FC because PIs' time could then be included as a direct cost. (In practice, as explained above, the increase in eligible cost might have led to an overall reduction in activity, not in direct costs).
- Other than PI time, we did not assume that Directly Allocated costs defined under TRAC – such as estates costs – could be regarded as a direct cost in the FC model for CAs and SSAs.
- For IP, STREP and NoEs, we assumed that the costs of PI input (salaries, indirect and estates costs) that could be included in the FC

model were treated as research activity/training/demonstration (fundable at 50%/100%/35% as appropriate) not as management (fundable at 100%). This is because the ceiling for funding on the management activity (7% of EU contribution) was likely to have already been reached on the project as a whole. We assumed this is the case even when the PI time relates to their role as co-ordinator.

PGR students

- These FP6 projects do not fund studentships and therefore we asked academics to exclude the additional PI time required for PGR training, to supervise the preparation of PGR dissertations, or for examination. (However, the PI time did include the time spent in supervising PGRs' research work – this is unlike Research Council projects where the latter time is also excluded from the fEC-based price).
- Tuition fees were not included as part of the fEC, nor included as part of other AC or FC grants. In practice, some of the salaries paid to PGR students may have been set at levels to reflect the fees they then, separately, have to pay.
- Despite the above, PGR student FTEs have been weighted, in accordance with TRAC methods, so that lower levels of indirect and estates costs are applied than would be the case for an RA. However, where an RA is also undertaking doctorate training, they have been treated as an RA in terms of the attribution of indirect and estates costs.

NoE issues

- Where an NoE partner had to commit themselves to a larger direct cost budget stated in the final contract than the figure funded by the EC, we assumed that this relates to the requirement (particular to that instrument) to demonstrate 'cost-sharing'. In a few cases the PI told us of additional direct resources they are committing to this project (not funded elsewhere) – RA time, or PGR input. However, in all other cases, we assumed that:
    a. The (unidentified, but quantified) direct costs in the contract that are committed to, but not funded by, the EC project, relate to other funded projects, the PI time on this project and/or the infrastructure and general level of research activity in the academic unit.
    b. The extra costs are therefore not chargeable against the EC project.
    c. The institution and EC auditors will agree with this. In practice it is not clear how the EC auditors will interpret this requirement.

Appendix 4 TRAC

This appendix gives an overview of the costing systems used by all universities and colleges of higher education in the United Kingdom – TRAC. This material is extracted from the published report 'An Overview of TRAC' produced by the Joint Costing and Pricing Steering Group (the sector body which was responsible for the development and implementation of TRAC) in June 2005. The full overview is available on www.jcpsg.ac.uk/guidance/downloads/Overview.pdf.

What is TRAC?

TRAC is the Transparent Approach to Costing. Since 2000, TRAC has been the standard methodology used by the 165 HEIs in the UK for costing their main activities (Teaching, Research, and Other core activity), and it is increasingly informing the public funding of higher education.

While it followed naturally from work done in the higher education sector in the 1990s, introducing TRAC was a government requirement. It was developed in 1999 as part of the Government's Transparency Review. It was piloted during the academic year 1999/2000, and implemented, progressively, from 2000-01. The dual-support reform of Research funding in 2003/04 has given further impetus (and new costing requirements) to TRAC, and further implementation work now in hand by institutions will continue for several years (until about 2008).

TRAC is not a single costing method, nor does it involve prescriptive standard requirements. HEIs in the UK are very diverse, as are the activities to be costed, and the uses of such cost information. Much academic activity poses inherent challenges for costing – think, for example, of defining the differences between research and scholarship and teaching; or the complexities of costing heritage buildings; or of knock-for-knock arrangements with the NHS in medical schools.

The strength of TRAC is that it is broad and flexible enough to accommodate all these challenges, and that it allows HEIs a good deal of discretion about the precise methods they use. Crucially, it does not require a much greater administrative burden, which 'full commercial costing systems' could, nor does it require academic staff to complete timesheets. At the same time, TRAC has been accepted by Government and the major public funders of Research and Teaching (chiefly the Funding Councils and Research Councils) as an appropriate and robust method for costing in higher education. Much of the funding of research is now based on TRAC costs (known as full economic costs – fEC).

TRAC could also be seen as a collaboration between HEIs and their principal stakeholders and public-funding bodies. The success of the sector in implementing TRAC, and the support of the Treasury for TRAC has benefited all institutions both directly in terms of their funding, and indirectly through the confidence it has engendered in Government.

As David Westbury, Chair of the Joint Costing and Pricing Steering Group, notes in his foreword to the TRAC Guidance, universities and colleges are not primarily businesses, but they must be business-like in the way that they use their financial, physical and human resources. Not least because they employ considerable public funds, and costing is a requirement of Government.

Costs, benefits and implications of TRAC

The information which TRAC has provided on the full long-term costs to institutions of their main publicly-funded activity has informed the funding of research, with over £1bn of additional funding being provided by the Government to make the UK's research base sustainable (that is, to make existing volumes of research more secure, not to increase volumes). Notably, from 2005, the UK Research Councils started to fund research projects at 80% of the TRAC full economic cost and this is significantly higher funding for the same work than the previous basis of 'direct costs plus 46% direct salaries'.

More generally, TRAC has contributed to the current policy interest in the sustainability of higher education, especially by highlighting the inadequate investments being made in infrastructure for Teaching and Research. The UK Government has provided extra capital funding, and all institutions are now required to take account of the full costs of their activities in their planning and management. Better cost information is of benefit to management decision-making, not least by informing price negotiations.

TRAC has introduced some new processes and activities in institutions that sit alongside existing accounting and project management systems. The most notable (from an academic's perspective) are the requirements to allocate academic staff time, and to build up the cost of research projects on a full economic cost basis.

Time allocation has been the most contentious issue, but is essential if HEIs are to know where their academic staff effort is being directed, and if they are to plan how these costs can be funded. The TRAC time allocation approach offers alternative options to HEIs, and does not require the use of timesheets. The process of costing research project grants has built on previous Research Council requirements, and the new procedures should not, if efficiently organised, prove onerous. However, academic principal investigators will need additional support and training in the early days of the new system.

Institutions also have to allocate non-staff costs (such as space and libraries) using robust methods, and develop their own charge-out rates for space and major facilities, and for residual indirect costs. They have to maintain records on the new fEC basis, and to quality assure their own internal TRAC systems.

There is also a new external quality assurance (QA) process.

A cost/benefit analysis of TRAC has been discussed by the Higher Education Regulation Review Group (HERRG). This suggests that the cost of implementing TRAC for a typical large multi-faculty research university is £400,000-500,000 per annum over a few years, chiefly in central administrative departments. (The figure is uncertain due to the flexibility allowed in TRAC. Some institutions will implement TRAC as part of a broader strategy for improved management information and resource allocation, others may treat it more as a stand-alone system.) Such a university will also now see increased research funding resulting from full economic costing at an annual level of at least 10-20 times this administrative cost. Costs (and benefits) will be significantly smaller for other types of institution.

HERRG agreed that 'despite the burdens of implementing this new system, TRAC had delivered significant benefits to the higher education (HE) sector'.

Core principles

TRAC has to satisfy a number of different objectives and stakeholders, and be applicable across all activities carried out by a large and diverse group of institutions, with a minimum of additional administrative effort. TRAC has had a broader impact on the HE sector than just as a costing method.

This breadth and flexibility is a great strength, but it can make TRAC appear more complex than a less flexible or comprehensive system. Much of its apparent complexity flows from the multiple activities and streams of accountability of HEIs, and the links between costing and funding (or pricing) for publicly-funded Teaching and Research.

Different people may not all have the same things in mind when they refer to TRAC. And it will be perceived differently in different institutions. The full Overview to the TRAC Guidance is aimed at helping those not involved with TRAC on a daily basis to understand what TRAC is (and is not), and its implications for their institutions.

TRAC will need to continue to evolve. The methods used to cost Teaching, and post-graduate research students, for example, may need to be further developed if funding of those activities is more closely linked to costs. Some costs need to excluded if TRAC is used to calculate the eligible costs that form the basis for the price for EU projects – and project-level time records for academic staff will continue to be required for these projects.

The core of TRAC, underpinning all its development, is a firm set of rather simple principles and processes that allow this evolution and development in a consistent and robust way. The most important principles are:

- materiality
- costs are fair and reasonably stated
- flexibility and choice of methods
- consistency of costing treatment
- a system that can be audited.

Ten high-level ‘costing standards’ define the processes that must be used to prepare annual TRAC costs. These were given in the Transparency Review report in 1999, and have remained essentially unchanged. To these have been added two new high-level requirements (fEC costing of research projects and annual reporting of income). These are all described by a set of minimum requirements.

The way in which TRAC is implemented is important. Every HEI has a TRAC project manager who has typically attended briefing and training sessions; has been involved in benchmarking with peer institutions as an aid to TRAC implementation; and has access to a regionally-based self-help group, and national helpdesk, as well as to the TRAC guidance. The guidance has evolved significantly since the first volume was produced, but it is now all consolidated into a single searchable web-based guide for those involved in implementation of TRAC.

TRAC has shown itself to be a robust and useful tool. This is due to a great part to the great assistance which has been provided by those in the pilot and other HEIs who have worked with the JCPSG in developing the guidance, and also by the government departments and other stakeholders who have all contributed to the current status of TRAC.

Appendix 5 Costs and recoveries for each project

The set of tables that follows gives a breakdown of costs and recoveries for each project included in our sample.

For each institution:

A
B
C
D
E
F

Three figures are shown:

a. Costs and Funding (AC and FC models)
b. Analysis of costs by type of cost
c. Analysis of costs by activity

The information from these is summarised in Figures 5 to 10 at the end of chapter 3.

Institution A

Figure a: Costs and funding (AC and FC models)

case study reference		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
instrument		IP	NOE	STREP	STREP	IP	STREP	STREP	STREP	CA	SSA
discipline		earth sci	earth sci	Eng	Eng	Eng	life sci	life sci	life sci	life sci	media
rate		lab	generic	lab	lab	lab	generic	generic	generic	generic	generic
role		partner	partner	partner	partner	partner	partner	partner	partner	partner	partner
TRAC fEC COSTS	£										
direct costs											
included in AC & FC grant calcs		88,688	146,143	241,324	171,821	244,361	77,511	89,065	31,129	23,918	7,749
not included		0	0	0	0	0	12,789	0	0	0	0
PI, estates and indirect costs											
included in FC grant calc		250,171	345,664	457,957	344,415	312,545	39,868	70,384	63,304	24,122	5,828
not included		72,702	93,177	148,556	115,198	95,346	25,142	18,962	16,512	6,039	850
total TRAC fEC	£	**411,561**	**584,984**	**847,836**	**631,434**	**652,252**	**155,310**	**178,411**	**110,946**	**54,079**	**14,428**
AC GRANT											
amount funded	£	106,426	229,903	289,589	206,185	293,233	92,678	107,020	59,764	28,702	8,828
recovery of TRAC fEC		**26%**	**39%**	**34%**	**33%**	**45%**	**60%**	**60%**	**54%**	**53%**	**61%**
FC GRANT											
amount funded	£	187,583	491,807	338,563	259,085	287,335	60,360	81,387	47,777	36,825	13,361
recovery of TRAC fEC		**46%**	**84%**	**40%**	**41%**	**44%**	**39%**	**46%**	**43%**	**68%**	**93%**

Institution A

Figure b: Analysis of costs by type of cost

case study reference	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
instrument	IP	NOE	STREP	STREP	IP	STREP	STREP	STREP	CA	SSA
discipline	science	science	Eng	Eng	Eng	science	science	science	science	science
role	partner	partner	partner	partner	partner	partner	partner	partner	partner	partner
	£									
Direct costs										
RAs	73,638	98,000	219,624	155,209	192,683	12,789	26,420	0	17,926	0
PGRs	0	0	0	0	0	62,025	50,006	23,500	0	0
project manager	0	0	0	0	0	0	0	0	0	0
consumables, travel, equipment	15,050	38,800	21,700	16,612	51,678	13,809	12,639	7,629	5992	7,749
sub-contracting	0	9,343	0	0	0	1,677	0	0	0	0
PI/Co-I	36,256	76,863	20,850	5,461	32,000	14,893	14,893	15,340	6,770	3,385
Estates	76,431	64,745	156,175	121,106	100,237	11,232	18,051	13,509	3,768	531
Indirect	210,186	297,233	429,487	333,046	275,654	38,884	56,401	50,967	19,623	2,763
	411,561	**584,984**	**847,836**	**631,434**	**652,252**	**155,310**	**178,411**	**110,946**	**54,079**	**14,428**

Figure c: Analysis of costs by activity

case study reference	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
instrument	IP	NOE	STREP	STREP	IP	STREP	STREP	STREP	CA	SSA
discipline	science	science	Eng	Eng	Eng	science	science	science	science	science
role	partner	partner	partner	partner	partner	partner	partner	partner	partner	partner
	£									
TRAC fEC Costs										
Research / Coordination / NoE / Support	366,564	572,426	670,570	629,500	634,488	151,969	175,086	109,826	52,472	14,428
Training	44,997	-			11,861					
Demonstration	-	-	159,573	-	-	-	-	-		
Management	-	12,558	17,694	1,934	5,904	3,341	3,325	1,120	1,607	-
TRAC fEC	**411,561**	**584,984**	**847,836**	**631,434**	**652,252**	**155,310**	**178,411**	**110,946**	**54,079**	**14,428**

Institution B

Figure a: Costs and funding (AC and FC models)

case study reference		B1	B2	B3	B4	B5
instrument		IP	STREP	CA	STREP	IP
discipline		soc sci	geography	computing	computing	geography
rate		generic	generic	generic	generic	generic
role		coord	partner	partner	partner	partner
TRAC fEC COSTS	£					
direct costs						
included in AC & FC grant calcs		396,687	92,100	19,567	138,443	271,342
not included		0	0	0	0	0
PI, estates and indirect costs						
included in FC grant calc		447,507	102,941	9,960	225,993	140,734
not included		73,684	18,065	2,490	32,641	32,384
total TRAC fEC	£	**917,878**	**213,106**	**32,016**	**397,078**	**444,459**
AC GRANT						
amount funded	£	476,024	106,673	23,333	166,132	324,410
recovery of TRAC fEC		**52%**	**50%**	**73%**	**42%**	**73%**
FC GRANT						
amount funded	£	471,038	100,470	23,333	182,714	216,296
recovery of TRAC fEC		**51%**	**47%**	**73%**	**46%**	**49%**

Institution B

Figure b: Analysis of costs by type of cost

case study reference	B1	B2	B3	B4	B5
instrument	IP	STREP	CA	STREP	IP
discipline	soc sci	geography	computing	computing	geography
role	coord	partner	partner	partner	partner
Direct costs	£				
RAs	152,850	49,533	12,383	115,985	201,342
PGRs	78,000	0	0	0	0
project manager (unless also a researcher)	0	0	0	0	0
consumables, travel, equipment	165,837	29,234	6,450	22,458	64,000
sub-contracting	0	13,333	733	0	6,000
PI/Co-I	152,770	30,680	0	95,430	11,200
Estates	75,688	24,406	2,285	29,958	29,722
Indirect	292,734	65,920	10,164	133,246	132,196
	917,878	**213,106**	**32,016**	**397,078**	**444,459**

Figure c: Analysis of costs by activity

case study reference	B1	B2	B3	B4	B5
instrument	IP	STREP	CA	STREP	IP
discipline	soc sci	geography	computing	computing	geography
role	coord	partner	partner	partner	partner
	£				
TRAC fEC Costs					
Research / Coordination / NoE / Support	811,626	207,206	25,376	396,086	423,509
Training	92,281	-	5,157	-	9,951
Demonstration	-	-	-	-	-
Management	13,972	5,900	1,483	991	11,000
TRAC fEC	**917,878**	**213,106**	**32,016**	**397,078**	**444,459**

Institution C

Figure a: Costs and funding (AC and FC models)

case study reference		C1	C2	C3	C4	C5	C6	C7
instrument		IP	IP	STREP	STREP	CA	NoE	IP
discipline		Life Sc	Soc Sci	soc sci	Soc sci	soc sci	Geog	Biosci
rate		Lab	generic	generic	generic	generic	generic	lab
role		partner	partner	Coordinator	partner	partner	partner	partner
TRAC fEC COSTS	£							
direct costs								
included in AC & FC grant calcs		647,399	129,069	126,426	12,928	42,222	16,604	239,244
not included		0	0	0	0	0	0	0
PI, estates and indirect costs								
included in FC grant calc		296,792	72,450	87,082	24,881	37,410	27,921	507,366
not included		45,119	13,375	13,459	3,582	4,007	2,417	81,689
total TRAC fEC	£	**989,310**	**214,893**	**226,967**	**41,391**	**83,639**	**46,942**	**828,299**
AC GRANT								
amount funded	£	576,000	154,883	151,712	15,514	50,666	19,925	366,612
recovery of TRAC fEC		**58%**	**72%**	**67%**	**37%**	**61%**	**42%**	**44%**
FC GRANT								
amount funded	£	515,315	100,759	113,861	18,905	69,510	44,525	401,034
recovery of TRAC fEC		**52%**	**47%**	**50%**	**46%**	**83%**	**95%**	**48%**

Institution C

Figure b: Analysis of costs by type of cost

case study reference	C1	C2	C3	C4	C5	C6	C7
instrument	IP	IP	STREP	STREP	CA	NoE	IP
discipline	Life Sc	Soc Sci	soc sci	Soc sci	soc sci	Geog	Biosci
role	partner	partner	Coordinator	partner	partner	partner	partner
	£						
Direct costs							
RAs	460,552	110,221	99,053	10,624	35,222	5,307	178,707
PGRs	0	0	0	0	0	0	0
project manager	0	0	14,215	0	0	0	0
consumables, travel, equipment	177,247	18,848	13,159	2,304	7,000	11,297	60,537
sub-contracting	9,600	0	0	0	0	0	0
PI/Co-I	62,825	0	14,175	5,445	15,703	14,829	89,548
Estates	57,027	10,568	10,634	2,759	3,166	1,910	115,093
Indirect	222,059	75,257	75,732	20,258	22,548	13,599	384,414
	989,310	**214,893**	**226,967**	**41,391**	**83,639**	**46,942**	**828,299**

Figure c: Analysis of costs by activity

case study reference	C1	C2	C3	C4	C5	C6	C7
instrument	IP	IP	STREP	STREP	CA	NoE	IP
discipline	Life Sc	Soc Sci	soc sci	Soc sci	soc sci	Geog	Biosci
role	partner	partner	Coordinator	partner	partner	partner	partner
	£						
TRAC fEC Costs							
Research / Coordination / NoE / Support	899,416	214,893	212,753	41,391	83,639	46,942	769,701
Training	80,293	-					50,570
Demonstration			-	-			-
Management	9,600	-	14,215	-	-	-	8,028
TRAC fEC	**989,310**	**214,893**	**226,967**	**41,391**	**83,639**	**46,942**	**828,299**

Institution D

Figure a: Costs and funding (AC and FC models)

case study reference		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
instrument		IP	STREP	IP	STREP	IP	SSA	IP	IP	NoE	NoE
discipline		eng	biol	environ	law	transp	transp	eng	mtls	food sci	biol
rate		lab	lab	generic	generic	generic	generic	generic	lab	generic	generic
role		coord	coord	partner	partner	partner	partner	partner	partner	partner	partner
TRAC fEC COSTS	£										
direct costs											
included in AC & FC grant calcs		637,248	318,105	229,912	27,612	162,598	64,459	221,811	360,778	82,811	484,923
not included		0	0	0	0	0	0	0	0	0	0
PI, estates and indirect costs											
included in FC grant calc		171,787	176,447	314,169	65,780	54,985	27,979	179,081	162,942	76,387	281,981
not included		33,271	33,740	45,495	8,967	12,304	6,261	33,505	37,221	12,769	51,159
total TRAC fEC	£	**842,307**	**528,292**	**589,576**	**102,359**	**229,887**	**98,699**	**434,397**	**560,940**	**171,966**	**818,063**
AC GRANT											
amount funded	£	715,407	378,851	275,894	32,596	194,661	75,092	254,672	432,516	93,952	581,910
recovery of TRAC fEC		**85%**	**72%**	**47%**	**32%**	**85%**	**76%**	**59%**	**77%**	**55%**	**71%**
FC GRANT											
amount funded	£	513,483	287,123	272,041	46,696	109,932	75,092	261,019	261,860	159,198	766,904
recovery of TRAC fEC		**61%**	**54%**	**46%**	**46%**	**48%**	**76%**	**60%**	**47%**	**93%**	**94%**

Institution D

Figure b: Analysis of costs by type of cost

case study reference	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
instrument	IP	STREP	IP	STREP	IP	SSA	IP	IP	NoE	NoE
discipline	eng	biol	environ	law	transp	transp	eng	mtls	food sci	biol
role	coord	coord	partner	partner	partner	partner	partner	partner	partner	partner
	£									
Direct costs										
RAs (incl some techns,admin etc)	208,461	151,767	196,117	21,550	100,196	42,131	138,885	228,961	49,181	148,329
PGRs	0	0	0	0	0	0	0	0	0	51,345
project manager (unless also a researcher)	89,226	75,586	0	0	0	0	0	0	0	0
consumables, travel, equipment	93,106	76,375	33,795	3,368	60,121	11,032	25,419	129,732	6,523	285,249
sub-contracting	246,456	14,377	0	2,694	2,281	11,296	57,506	2,085	27,107	0
PI/Co-I	29,085	31,734	110,854	25,705	0	0	29,349	15,088	19,324	60,000
Estates	37,286	37,811	35,525	7,002	9,608	4,889	26,163	63,978	9,970	52,500
Indirect	138,688	140,642	213,285	42,040	57,682	29,351	157,075	121,097	59,861	220,640
	842,307	**528,292**	**589,576**	**102,359**	**229,887**	**98,699**	**434,397**	**560,940**	**171,966**	**818,063**

Figure c: Analysis of costs by activity

case study reference	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
instrument	IP	STREP	IP	STREP	IP	SSA	IP	IP	NoE	NoE
discipline	eng	biol	environ	law	transp	transp	eng	mtls	food sci	biol
role	coord	coord	partner	partner	partner	partner	partner	partner	partner	partner
	£									
TRAC fEC Costs										
Research/ CA and SSA activities	624,376	448,598	589,576	102,359	227,606	96,526	302,815	560,940	170,566	818,063
Training	0	0	0	0	0	0	131,582	0	0	0
Demonstration	0	0	0	0	0	0	0	0	0	0
Management	217,931	79,694	0	0	2,281	2,174	0	0	1,400	0
TRAC fEC	**842,307**	**528,292**	**589,576**	**102,359**	**229,887**	**98,699**	**434,397**	**560,940**	**171,966**	**818,063**

Institution E

Figure a: Costs and funding (AC and FC models)

case study reference		E1	E2	E3	E4	E5	E6
instrument		IP	STREP	IP	STREP	NoE	CA
discipline		comp	comp	chem	comp	eng	marine sci
type of work		generic	generic	lab	generic	lab	generic
role		partner	co-ord	partner	partner	partner	partner
TRAC fEC COSTS	£						
direct costs							
included in AC & FC price calcs		222,838	334,034	237,688	188,636	130,589	11,108
not included		0	0	0	0	37,446	0
PI, estates and indirect costs							
included in FC price calc		170,296	234,365	160,783	171,199	90,024	8,358
not included		41,630	54,283	42,244	40,543	60,838	1,286
total TRAC fEC	£	**434,764**	**622,682**	**440,716**	**400,378**	**318,897**	**20,752**
AC PRICE							
amount funded	£	266,310	386,134	283,856	225,451	156,707	13,110
recovery of TRAC fEC		**61%**	**62%**	**64%**	**56%**	**49%**	**63%**
FC PRICE							
amount funded	£	207,155	306,203	203,815	182,197	220,613	18,330
recovery of TRAC fEC		**48%**	**49%**	**46%**	**46%**	**69%**	**88%**

Institution E

Figure b: Analysis of costs by type of cost

case study reference	E1	E2	E3	E4	E5	E6
instrument	IP	STREP	IP	STREP	NoE	CA
discipline	comp	comp	chem	comp	eng	marine sci
role	partner	co-ord	partner	partner	partner	partner
	£					
Direct costs						
RAs	157,815	169,700	88,647	127,525	107,580	2,709
PGRs	0	0	39,000	0	0	0
project manager	0	35,459	0	0	0	0
consumables, travel, equipment	59,546	55,343	103,195	56,552	60,455	7,303
sub-contracting	5,477	73,532	6,846	4,559	0	1,096
PI/Co-I	40,600	65,250	25,484	44,891	23,925	4,350
Estates	20,879	27,226	50,644	20,334	27,624	645
Indirect	150,446	196,173	126,899	146,517	99,312	4,649
	434,764	**622,682**	**440,716**	**400,378**	**318,897**	**20,752**

Figure c: Analysis of costs by activity

case study reference	E1	E2	E3	E4	E5	E6
instrument	IP	STREP	IP	STREP	NoE	CA
discipline	comp	comp	chem	comp	eng	marine sci
role	partner	co-ord	partner	partner	partner	partner
	£					
TRAC fEC Costs						
Research /Coordination/ NoE	411859	578675	431369	395819	318897	19656
Training	17427	0	2501	0	0	0
Demonstration	0	0	0	0	0	0
Management	5477	44007	6846	4559	0	1096
TRAC fEC	**434764**	**622682**	**440716**	**400378**	**318897**	**20752**

Institution F

Figure a: Costs and funding (AC and FC models)

case study reference		F1	F2	F3	F4	F5	F6	F7	F8	F9
instrument		NoE	CA	SSA	SSA	STREP	IP	IP	STREP	IP
discipline		science	transp	medical	eng	med	agric	business	agric	agric
rate		generic	generic	lab	lab	lab	lab	generic	generic	generic
role		partner	coord	coord	coord	partner	coord	partner	partner	partner
TRAC fEC COSTS	£									
direct costs										
included in AC & FC price calcs		64,450	43,007	995,824	319,730	105,000	1,809,283	21,614	125,981	129,930
not included		0	0	0	11,564	0	0	0	0	0
PI, estates and indirect costs										
included in FC price calc		49,080	74,479	642,768	41,743	151,093	852,409	37,534	108,785	120,879
not included		14,761	13,216	220,978	17,560	42,628	198,172	5,099	30,827	30,184
total TRAC fEC	£	**128,291**	**130,702**	**1,859,570**	**390,597**	**298,721**	**2,859,864**	**64,247**	**265,593**	**280,994**
AC GRANT										
amount funded	£	77,165	51,608	1,180,239	293,690	125,000	2,109,963	24,062	149,219	151,850
recovery of TRAC fEC		**60%**	**39%**	**63%**	**75%**	**42%**	**74%**	**37%**	**56%**	**54%**
FC GRANT										
amount funded	£	113,530	93,097	1,224,735	383,676	132,578	1,602,358	29,574	117,383	127,905
recovery of TRAC fEC		**88%**	**71%**	**66%**	**98%**	**44%**	**56%**	**46%**	**44%**	**46%**

Institution F

Figure b: Analysis of costs by type of cost

case study reference	F1	F2	F3	F4	F5	F6	F7	F8	F9
instrument	NoE	CA	SSA	SSA	STREP	IP	IP	STREP	IP
discipline	science	transp	medical	eng	med	agric	business	agric	agric
role	partner	coord	coord	coord	partner	coord	partner	partner	partner
	£								
Direct costs									
RAs (and some clerical)	48,325	27,653	776,743	0	78,750	1,067,993	0	100,938	81,015
PGRs	0	0	0	0	0	0	0	0	0
project manager (unless also a researcher)	0	0	0	0	0	0	0	0	0
consumables, travel, equipment	15,250	15,354	145,331	236,186	21,250	435,406	21,614	15,438	28584
sub-contracting	875	0	73,750	0	5,000	305,885	0	9,606	20,331
PI/Co-I	4,884	34,573	37,080	95,108	34,252	327,398	22,125	16,666	30,682
Estates	7,858	6,708	172,450	14,936	33,267	172,450	2,577	16,589	16,243
Indirect	51,098	46,414	654,217	44,368	126,203	550,733	17,931	106,357	104,139
	128,291	**130,702**	**1,859,570**	**390,597**	**298,721**	**2,859,864**	**64,247**	**265,593**	**280,994**

Figure c: Analysis of costs by activity

case study reference	F1	F2	F3	F4	F5	F6	F7	F8	F9
instrument	NoE	CA	SSA	SSA	STREP	IP	IP	STREP	IP
discipline	science	transp	medical	eng	med	agric	business	agric	agric
role	partner	coord	coord	coord	partner	coord	partner	partner	partner
	£								
TRAC fEC Costs									
Research / Coordination /NoE activities	128291	81131	1721733	366341	289659	2316841	64247	265593	275994
Training	0	0	0	0	0	0	0	0	0
Demonstration	0	0	0	0	0	89406	0	0	0
Management	0	49572	137838	24256	9063	453618	0	0	5000
TRAC fEC	**128291**	**130702**	**1859570**	**390597**	**298721**	**2859864**	**64247**	**265593**	**280994**