Centre for Energy Efficient systems

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# Partnership and Collaborative approaches to forthcoming EU FP7 Calls for research proposals in Renewable Energy

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Staffordshire University

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CREATE THE DIFFERENCE

**Plenary Session ICREPQ 14th April 2011**

# Presentation Purpose

- To position the importance of collaboration in EU FP7 funding to the University and our partners.
- Explain our approach to collaboration.
- Engage with ICREPQ 11 attendees for the next FP7 Energy call in July 2011 and more..

# Two quick questions

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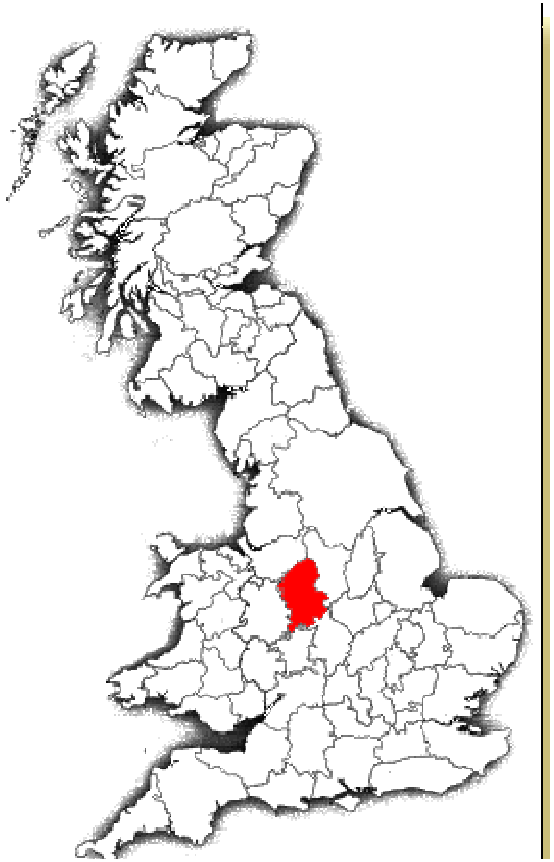
- Has anyone here been involved in previous FP7 Funded research?
- Is anyone intending to make an FP7 proposal this year or next year?
- Is anyone intending to make a “Marie Curie” proposal to the current call?

# Staffordshire University

- Stafford, Stoke on Trent, Lichfield in the  UK
- Worldwide reach: China, Malaysia, Singapore, Hong Kong, India, Sri Lanka
- 15,000 students
- Faculties: Health, CET, Business
- Focus on Innovation
- Commitment to SMEs



# Faculty of Computing, Engineering and Technology (FCET)

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Applied Research Centres

- Centre for Information, Intelligence & Security Systems
  - Video Analytics and Forensics, Intelligent Data Analysis
- Mobile Fusion Centre
  - RFID Development Centre
  - Mobile Technology Specialists, Mobile Ad-hoc networks
- Centre for Media Arts and Technology
  - High Definition 140 seat TV studio,
  - Film, TV and Games technologies

# Centre for Energy Efficient Systems

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The main theme that runs through the activities of the Centre is the application of technologies to optimise the use of energy in engineering systems.

- Power Electronic Systems and Devices
- Power Generation, Transmission and Distribution
- Grid Integration of Renewable Energy Systems
- Renewable Energy, Wind, Biomass
- Thin  Film Technologies
- Thermoelectric Energy

# Centre for Energy Efficient Systems: Staff & Resources

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Over 15 academic staff staff from Full Professors, to Enterprise Readers and Innovation Developers and Business Support: total 35 staff

Electronic Design Centre

- Research projects with Industry
- Transfer & Dissemination of Knowledge
- Teaching
- Training courses for industry
- Consultancy work

# What is FP7?

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"Framework Programme for Research and Technological Development"

Seven year programme 2007-2013 €50 billion

Meet EU needs in terms of jobs and competitiveness and to strengthen the scientific & technological base of European industry;

To encourage its international competitiveness, while promoting research that supports EU policies.

Maintain leadership in the global knowledge economy.

# What is FP7?

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Programme of grants to research actors all over Europe and beyond

- Universities,
- Industry,
- Small and Medium Enterprises

To co-finance research, technological development and demonstration projects.

Grants are determined on the basis of calls for proposals and a peer review process, which are highly competitive.

# What is FP7?

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FP7 projects must have must have a “European added value”.

One key aspect of the European added value is the transnationality of many actions.

Research projects are carried out by consortia which include participants from different European (and other) countries;

# What is FP7?

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FP7 constitutes  five major building blocks:

- Cooperation
  - The core of FP7, is the Cooperation programme. It fosters collaborative research across Europe and other partner countries, in Health, Energy, Environment, ICT, Security etc.
- Ideas
  - supports "frontier research" solely on the basis of scientific excellence.
- People
  - support for researcher mobility and career development, both for researchers inside the European Union and internationally
- Capacities
  - strengthens the research capacities that Europe needs to become a thriving knowledge-based economy.
- Nuclear Research
  - Include Fusion, nuclear safety, environmental impact

# FP7 European Energy Research Funding

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Linking to Staffordshire Universities Innovation Objectives

SME involvement

Support from government (bid support etc)

ERRIN European Regions Research and Innovation Network

WEST MIDLANDS EUROPEAN SERVICE

UKRO UK RESEARCH OFFICE

# FP7 European Energy Research Funding

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Research Projects, some key questions:

- Why are you asking for the money?(what are you trying to achieve?)
- Are you/ addressing EU priorities e.g Climate Change?
- Should the problem be better addressed at a national level?
- Is the answer already “out there”?
- Why today?
- Why choose us? Do we have the best people?
- Do we understand the processes?

# Projects we are delivering

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**Centre for science** Low-carbon technology

theguardian

# Energy research gets the green light

Biofuels could play an important role in creating a low-carbon economy, but the technology is still very much in development. However, scientists in the West Midlands are leading the way, says **Christopher Mowbray**

The green energy of the future will be crucial to the way society powers its transport, homes and industry, reducing dependence on fossil fuels.

And the West Midlands region, which has already pioneered electric vehicle testing, is now on its way to becoming a leading centre for important low-carbon vehicle and fuel research, through a series of groundbreaking projects at a number of universities.

Much of the research is being led by Aston University, which has become a world-leading research centre in bioenergy and one of the top five universities in the People and Planet Green League, a student-led action group.

The university's vice-chancellor, Julia King, who advises Birmingham city council on how to reduce its carbon emissions by 50% by 2026, says: "We have both depth and breadth of expertise in low-carbon technologies in West Midland universities and businesses. I am confident that the application of our research will have a major, positive impact on the reduction of carbon emissions and the growth of the regional and national economy."

King, who is also a member of the Committee on Climate Change and UK Trade

## Centre of excellence

At Staffordshire University, a new £30m science and technology centre will house the university's renewable energy work, including a £6.3m project to promote Staffordshire as a European centre of excellence for biomass fuels.

Led by Professor Tarik Al-Shemmeri, the project aims to accelerate the use of biomass fuels in north-west Europe. It has European funding and the university also has a new demonstration facility which companies can use.

Al-Shemmeri explains: "North-west Europe relies strongly on imported energy. Our regions are facing common challenges about how to reduce waste going to landfill and meet energy demands through biomass. Our project will identify where co-operation can help."

# FP7 Energy 2012

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| Official call identifier | Thematic Domain | Expected publication Date | Expected Deadline |
|---|---|---|---|
| FP7-ENERGY-2012-1 | Energy | 19 July 2011 | 25 Oct 2011 |
| FP7-ENERGY-2012-2 | Energy | 19 July 2011 | 8 March 2012 |
| FP7-ENERGY-SMARTCITIES-2012 | Energy | 19 July 2011 | 1 Dec 2011 |
| FP7-PEOPLE-2011-IEF / IIF (Marie Curie Actions) | MOBILITY | 16 Mar 2011 | 11 Aug 2011 |

# Draft FP7 Energy 2012 Call Topics

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## Photovoltaics:

2012.2 1-1 Reliable, cost-effective, highly performing PV systems

2012.2.1-2 Demonstration of multifunctional PV modules

## Wind

2012.2.3.1 Innovative wind conversion systems (10-20MW) for offshore applications

# Draft FP7 Energy 2012 Call Topics

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## Ocean

2012.2.6-1 Demonstration and deployment of first ocean energy farms

## Renewable Fuel Production

2012.3.2.1 Biofuels from microalgae or macroalgae

2012.3.2.2 Development and testing of advanced sustainable bio-based fuels for air transport]

2012.3.2.3 Pre-commercial industrial scale demonstration plant in lignocellulosic ethanol

# Draft FP7 Energy 2012 Call Topics

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## Renewables for Heating and Cooling

Research and development for medium temperature range solar collectors (100-250 degrees C)

Demonstration of Medium-large scale biogas plants

Innovative Integration of renewable energy supply and energy efficiency in large buildings and/or concerto communities

## Smart Energy Networks

Integration of variable distributed resources in distribution networks

Enhancing electricity networks through use of distributed intelligence

# Draft FP7 Energy 2012 Call Topics

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## Cross Cutting Issues and Technologies

Networking of national R&D and demonstration projects on smart metering infrastructure and data processing

Support to the coordination of stakeholders activities in the field of Smart Grids

# Draft FP7 Energy 2012 Call Topics

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## Horizontal Programme Actions

10.2 CALL “THE OCEAN OF TOMORROW

Joining Research Force to meet challenges in Ocean Management

10.4 EC-ESA PILOT ACTION TERRESTRIAL USE OF SPACE PHOTOVOLTAICS

2012.10.4.1 INTEGRATED SPACE AND TERRESTRIAL SOLAR POWER PLANTS

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# Project ideas

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# Marie Curie Actions

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- Mobility for researchers
- IEF – Incoming  European Fellowships
- IIF – Incoming International Fellowships
- 100% Funded
- Normally two years

# 2012.2.3.1 Innovative wind conversion systems (10-20MW) for offshore applications

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- AC connection is difficult or impossible
- DC is the way- Collection and transmission
- Power Electronics
- Voltage source converters-HVDC- STATCOM
  - Topologies, Two level, Multi-level series connection of IGBTs
  - Energy Storage, Super capacitors, batteries, Fly Wheel Technologies
  - Grid Compliance

# Photovoltaics

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- Thin Film Laboratory
- Organic Solar Cells (Prof Torfeh Sadat-Shafai)
- Two PhD Projects

# Renewable Fuel Production

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- Biomass Centre
- 7.2 Million EU grant
- Can provide access to facilities

# Innovative Integration of renewable energy supply and energy efficiency in large buildings and/or concerto communities

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- Integration of Solar and wind
- At present in discussion with a number of partners.
- Project proposal is being produced
- Possibilities for adding other sources

# Pulsed Plasma Technology

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- Directional Properties
- Space and Terrestrial Applications
- Powered by solar
- Circuit Breakers
- Prototype ready by July 11 - Test in Vacuum

# Call to Action !

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Work with us to consider FP7 project Ideas

Contact us

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Thankyou !