

Greening Imperial

Making Imperial College London a Leader in Sustainability and in Action on Climate Change

Paper to the Provost's Board, February 2018

Executive Summary

This paper arises from the Greening Imperial Scoping Study, approved by Provost's Board in February last year. The report is a call to action - action to raise Imperial's aspirations and achievements in creating a sustainable, low-carbon future for itself and the world. After all, if a university such as Imperial cannot take a long-term systems view, how can we expect governments and society at large to take these challenges seriously?

Imperial has much to be proud of. We contribute significantly to the science, policy and innovation that will guide the development of this cleaner future. Our portfolio of research in sustainability in excess of £115 M reflects this. Our deep ties to the UK Energy Research Centre (UKERC), the Intergovernmental Panel on Climate Change (IPCC) and Climate-KIC are avenues that create impact for this research. Our postgraduate degrees in energy, sustainability and climate change are creating influential agents of change.

Whilst there are successes to celebrate, there is more to be done. Imperial ranking in the bottom 10% for university sustainability casts a sharp focus on the reputational risk of inaction – with students, funders and society at large.

Our position as leaders of technical progress, ushering in a better future, will be damaged if we cannot transform the fabric of the College. Our infrastructure and operations need step change improvements in their environmental sustainability. Our impact on the world demands that we equip our graduates – the engineers and financiers of the future - to create a sustainable low-carbon economy. In parallel, we must find improved channels for translation of our sustainability research into societal impact. These are big challenges, but ones that we must address.

To achieve this transformation, the College must have a strong Sustainability Vision embedded in its Strategy and College Leadership needs to demonstrate strong, enduring and visible commitment and ambition. We can learn from others that are leading the way: our peers, including MIT and Cambridge, have embraced a deep commitment to sustainability, which enhances rather than compromises their research and teaching. We have identified over 300 staff and students who would actively volunteer to support these efforts.

Our main recommendations are:

1. The creation of a **post of Associate Provost (Sustainability) (APS)**. The APS will be the focus for Greening Imperial and drive the transformation of our performance and delivery in this area. The APS will work with all arms of the College and engage the College community to develop our approaches to delivering more environmentally-sustainable infrastructure, operations and decision making, and universal education in sustainability at undergraduate level.
2. The setting of meaningful **sustainability targets** that are consistent with national and local targets and put College in a leadership position, covering greenhouse gas emissions, waste management, chemical footprint, sustainable transport and water use. For example: zero direct greenhouse gas emissions by 2040.
3. The APS be charged with **engaging the Imperial community and its networks** in developing viable routes to delivering these targets and holds us to account. This role is particularly important as we develop Imperial's new campus.

These actions will deliver a step-change in Imperial's public and professional reputation and the impact on society of our people and research outputs, as well as financial returns from significant reductions over time in energy and other utilities costs.

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1. Context

This paper recommends a step change in Imperial's approach and profile on sustainability issues. These recommendations are based on the findings of a scoping study, carried out with the endorsement of the Provost Board following the presentation of a paper ('Making Imperial College London a Leader in Sustainability and in Action on Climate Change') on 24th February 2017, to establish Imperial's current position and activities in this area and explore how Imperial could transform its position.

The scoping study initiative, branded as Greening Imperial, was motivated by a realisation that many of Imperial's major competitors were adopting a high profile in this space (e.g. MIT's 2015 'five-year Plan of Action on Climate Change'; University of California's target to become carbon neutral by 2025; UCL's Sustainability Team's 15% carbon emissions reduction target by 2020, paying energy bills with a mandate to reduce them; Cambridge's £2million Building Efficiency Fund to which all staff/students can propose business plans) whereas the College's stance was neither clear nor very visible. Moreover, Imperial's performance in sustainability ranking tables, such as the People and Planet Green League of Universities, was extremely poor, suggesting either mediocre performance or inadequate communication on sustainability and climate change issues.

The scoping study was carried out in the context of major national growth in momentum for sustainability action in recent years: the global agreement on Sustainable Development Goals in 2015, the UK government's Clean Growth Strategy in 2016 and, locally, the London Environmental and Economic Development Strategies in which Imperial has the opportunity to play a leading role.

The study sought to identify opportunities for action and integration across six areas of the College's activity: Operations, Education, Research, Influence (Policy), Outreach, and Alumni Engagement/Advancement. It set out to:

- Establish what we are doing now in these six areas on sustainability and climate change action
- Benchmark Imperial against other universities
- Identify challenges and opportunities for future action and integration
- Test the appetite of staff and students for active engagement with future initiatives
- Make recommendations for a three-year plan about practical ways the College can enhance its sustainability and climate change mitigation offering.

The full report with detailed findings and recommendations will be available in early March. This paper summarises the findings and presents the main recommendations for discussion and adoption.

2. The review process and main findings

The study's recommendations were drawn from a variety of different consultation and research methods:

1. Survey across all staff and students, with about 850 responses
2. Focus groups (students, DoMs, building user groups, potential sustainability 'champions')
3. Interviews: Faculties, Campus Services, Estates, Student Union, Estates, ICT, Secretariat, Education and Research Offices, Friends of Imperial
4. Desk-based studies of existing courses, research and operational activities
5. 3 MSc projects to address particular issues

6. Contact with other institutions

These efforts revealed examples of good practice in most areas, especially in:

1. Education: A number of our sustainability-related courses have an exceptional reputation and reach.
2. Research: About 1/3 of our funding relates in some way to sustainability, energy efficiency and climate change mitigation
3. Commercial spin-outs: Some of these companies are focussed on delivering for sustainability, such as Eonic (polymers from sustainable feedstocks) and Nexxon (more sustainable rechargeable batteries)
4. Some large operational investments: Onsite combined heat and power (CHP) – 2 x 4.4 MW plants at South Kensington and new installations at Wilson House and White City accommodation
5. Estates Facilities initiatives such as
 - i. The adoption of an Environmental Management System (EcoCampus) and the drive towards achieving ISO14001 Environmental Management Standard
 - ii. Efficiency monitoring and improvement, with a £600K pa budget

However, these activities are largely uncoordinated, have quite a limited impact on our own operations and research translation, and are under-resourced and poorly documented both on the College website and by internal stakeholders. The College performance in all six key areas is fully documented in the full report.

A major concern is the extent to which we are lagging behind our peers in sustainability practice. For example:

- UCL where the sustainability team has responsibility for paying energy bills and a mandate to reduce them, and openly reports on a range of ambitious environmental targets
- MIT has had an office for sustainability for 10 years and developed 'living labs'
- Cambridge where all staff/students can propose business plans for building efficiency funding consideration (£2 million fund)
- King's College London has over 75 sustainability champions across the College supported by the Facilities Team.

However, from the survey it is clear that staff and students have a huge appetite for more action on sustainability and avoiding climate change:

- 97% think we should be acting on sustainability and climate change and doing more
- 98% think we should spend more money on sustainable infrastructure (existing buildings and White City)
- Respondent priorities are: 1) Built Environment and Building Efficiency; 2) Energy Generation and Consumption; 3) Waste and Recycling.
- 308 respondents (35%) said they would like to be involved in future initiatives
- 83% are dissatisfied with our national performance in terms of sustainability (141st out of 151 universities in The Green League of Universities survey)
- 82% felt Sustainability should be led by the President, Provost or a Sustainability Director

3. Recommendations

With this in mind, we make the following key recommendations:

1. Establish a strong **Vision**: Imperial aspires to be a world leader in Sustainability and Action on Climate Change, by example through the way we operate our campuses and operations, through our research and translating sustainable solutions into practice, through our education of students by embedding sustainability issues into the curriculum and the student experience and through our policy work and outreach to encourage, drive and enable sustainable practices with our corporate partners and society at large.

2. To achieve this, sustainability and action to avoid major climate change should be a key, explicit part of the **College Strategy**.
3. The College **leadership** should demonstrate strong, enduring and visible commitment to sustainability issues, providing vision on environmental issues and making suitable public statements and commitments about this area, similar to those made about inclusivity and diversity, for example.
4. Imperial should **lead by example** the local, national and global community on sustainability and action on climate change, creating the most sustainable university campuses globally and becoming the go-to institution for greater understanding and practical solutions in this field.
5. Imperial should adopt a more **holistic approach** to advancing sustainability across the College, encompassing all three of its principles – environmental, social and economic – instead of focusing mainly on the latter, which has tended to be the emphasis hitherto.
6. The step-change required can only be achieved by **strong engagement and empowerment of staff and students** to be more environmentally minded and aware. Imperial should aim to create environmentally conscious future leaders, equipped to apply sustainability principles to real-world problems both during their studies and in their future careers.
7. As part of this, the College should commit to a series of **headline targets** on a range of sustainability metrics, including achieving zero net carbon emissions across all its campuses by 2040, in line with Mayor of London targets, with ambitious interim targets.
8. The College should provide the resources and encouragement to **grow a sustainability culture and community** across Imperial. Sustainable actions and projects should be seen as an investment (with a medium to long term return) rather than as an upfront cost. The benefit will come from a step-change in Imperial's public and professional reputation and the impact on society of our people and research outputs, as well as financial returns from significant reductions over time in energy and other utilities costs.
9. To this end, the College should appoint an **Assistant Provost for Sustainability (APS)**, along similar lines to the post created to drive Equality, Diversity and Inclusion. The primary initial responsibilities of the Assistant Provost will be:
 - a. To develop a sustainability strategy for adoption by the College
 - b. To create and nurture a 'Greening Imperial' culture and community that is embraced by all College staff and is able to pick up and develop initiatives proposed by staff and students.
 - c. To devise and implement an action plan to deliver the strategy against agreed targets
 - d. To monitor progress in achieving these targets and to hold the College to account; metrics should be widely publicised to encourage participation across the College
 - e. To improve reporting and communication of sustainability goals and achievements; in particular to upgrade the sustainability/environment website and publish an annual sustainability report.
10. The Assistant Provost should be supported by a **Sustainability (Greening Imperial) Leadership Group** with representation from College top management for the following key areas: Operations, Education, Research, Policy and Influence, Outreach. This group provides leadership, takes ownership of sustainability initiatives and decides on priorities and targets.
11. To help increase the visibility of the activity across the College, the APS should lead a high profile activity called **Greening Imperial** (or similar). This would bring a sense of campaign and urgency to the activity and enable committed participants to engage and feel part of the whole activity.

12. The APS should set up a **support structure** for sustainability activity and identify key individuals and groups to enable delivery of the strategy. The approach requires top-down support and coordination but should also enable both planned and *ad hoc* bottom-up action and initiatives. This support structure should help coordinate and ensure continuity between longer-term initiatives, such as those led by staff, and shorter term student projects and initiatives.
13. The APS should develop an approach to **engaging the community**, which could include a network of departmental and student sustainability and climate change mitigation champions, action committees or similar. This network can build on the volunteers identified in the Greening Imperial strategy, and should build on existing student and staff initiatives. The existing Greening Imperial *ad hoc* group should re-constituted as the Greening Imperial Advisory Group to support the Assistant Provost, the Sustainability Champions, and 'bottoms-up' projects from departments, institutes and students; to advise the Sustainability Leadership Group as required.
14. A specific **three year action plan and suitable targets** are included in the Appendix. A combination of different types of projects is required, from short-term 'low-lying fruit' such as implementing accepted good practice to give fairly immediate returns, to longer-term projects transforming the College's sustainability culture and performance.
15. The APS should work with the College to **embed the medium and long-term financial impact of energy and resource efficient buildings** when making decisions relating to new-build and refurbishment projects.
16. The APS should work with the college to **integrate sustainability more effectively** into decisions about more ambitious, **long-term, buildings-related projects** such as refurbishment and retrofit and South Kensington, Hammersmith or White City new build, and demonstrators of emerging technology such as ground-source heat pumps, where we could, for example, work with our neighbours by reactivating the 2011 Carbon Reduction Masterplan for the 1851 Estate.
17. Positioning Imperial as a key player in the development of London's **Cleantech Innovation Cluster** would be one route to establishing Imperial as a recognised leader in sustainability amongst government and the broader community.

5. Greening Imperial Steering Group

The Greening Imperial Report and this paper have been produced by:

Rachel Blythe & Matt Blackett – Imperial College Union
Celia Carling – Centre for Environmental Policy
Joanna Haigh – Grantham Institute for Climate Change
Daniel Hdidouan – Centre for Environmental Policy
Alyssa Gilbert – Grantham Institute for Climate Change
Geoff Maitland – Department of Chemical Engineering
Sara Muir – Estates
Richard Templer – Department of Chemistry
Iain Staffell – Centre for Environmental Policy

Appendix: Proposed Three Year Action Plan

Year 1

Leadership

1. Provost's Board approves plan for enabling a step-change in the College's sustainability activity and profile, the appointment of an Assistant Provost Sustainability and the general approach to drive and support the activity.
2. Provost's Office develops a job description for Assistant Provost Sustainability (APS) and assigns resources in 2018-19 budget, including administrative support.
3. The Provost's Office to begin the establishment of the sustainability leadership group (SLG) in parallel with the appointment of the APS.
4. APS post advertised and appointment made; the APS drives forward the actions that follow below.

Strategy

5. APS proposes an Imperial Sustainability Strategy, for approval by the Provost's Board and subsequent incorporation into the College strategy.

Community building and Networks

6. Working with Department/Institutes/Students (Union), the APS sets up a suitable engagement structure to establish a motivated and effective Sustainability Champions Network of volunteers (or similar) to support each other, exchange best practice and enable cooperative activities across Faculties and the College
7. Engage with individuals/groups identified in the survey of the scoping study to involve them as champions and in projects; identifying opportunities for enthusiastic people to participate actively is a key part of mobilising the enthusiasm for sustainability action that is evident across the College.
8. Establish good lines of communication with Neil Alford (Associate Provost, Academic Planning) and Graham Stark (Development Director for White City Campus) to identify opportunities for
 - a. Building sustainable concepts into the construction and operation of the White City campus;
 - b. Measuring and publicising the benefits of these approaches;
 - c. Testing and demonstrating new sustainability technologies and solutions developed at Imperial on the White City campus
 - d. Engaging with local stakeholders, such as Hammersmith and Fulham Council, to maximise sustainability benefits as White City develops and linking up with the outreach work of Associate Provost (Academic Partnerships).
9. Consider rejoining the International Alliance of Research Universities (IARU) network, and/or the NUS Green Impact and the International Sustainable Campus Network, for ongoing collaboration and knowledge exchange of best practice.

Develop and deliver an action plan

10. Building on the recommendations of the Greening Imperial report, develop a (rolling) 3-year action plan to implement the Imperial Sustainability Strategy. This action plan will be developed in collaboration with the Sustainability Leadership Group (SLG) and sustainability champions.
11. First steps in the working plan are to build the foundations for sustained change in each of the six key areas. More specific suggestions for action in each area are given in the Greening Imperial Report. The priorities for year 1 should be:

- a. To work through the SLG owner for each key area and the sustainability champions, building on the information gathered in the report, to identify
 - i. Existing sustainability activities and people that can form the foundation for growing the sustainability base and engagement; encourage firming up on targets and metrics if not in place;
 - ii. New projects for which enthusiastic leaders can be identified, prioritising if necessary according to delivery against strategy;
 - iii. With the sustainability champions and Operating Units how any additional required resources can be provided.
- b. Encourage and support project leaders/teams to develop clear action plans and targets/metrics; use the Greening Imperial Advisory Group as a resource for this.
- c. The action plan should include a series of annual metrics against which to monitor progress which should be set at College, Faculty and Operating Unit level

12. Resources required at APS/SLG level for implementation of 2018-19 plan to be identified in time for these to be incorporated in budget.

Reporting, Communications and Review

13. Establish a database of existing sustainability-related activity in the six key areas; exploit this in a number of ways:

- a. Transform the Imperial Sustainability website so that it fully reflects College strategy, policies, the new Sustainability governance structure, existing activity in operations, education, research, policy and influence and outreach, new and planned initiatives, targets/metrics and performance against these. In particular the site should address all the categories against which surveys like the People and Planet Green League of Universities evaluate universities. An urgent immediate target is to have all the current data and information available for the 2018 audit by Green League in July.
- b. Develop with the Global Challenge Institutes, in particular the Grantham Institute and Energy Futures Lab, and the communications and digital teams a tool to help students, academic and professional staff to identify sustainability, environmental and climate change orientated skills and research in the College that could be harnessed and applied to the benefit of society.

14. At the end of year 1 the APS should have:

- a. identified, and activated, the 'low-hanging fruit' where significant impact on our sustainability profile can be achieved with relatively little or readily available resource;
- b. used these examples to demonstrate by summer 2019 the significant change these have made on our sustainability performance;
- c. communicated effectively within and outside the College the most effective and impressive achievements, to start to establish Imperial as a sustainability leader
- d. prioritised and developed plans for projects for years 2 and 3 and line up the necessary resources.

15. Update rolling three-year plan for 2019-22, with budget requirements identified in time for the 2019-20 planning round. Approval by Provost's Board.

16. Produce a concise and meaningful end-of-year Sustainability Report, summarising 2018-19 activity and impact. Review by Provost's Board.

Year 2

Develop and deliver the Action Plan

1. Implement year 2 project plan in each of the five key areas and provide necessary support through APS, SLC and Greening Imperial SAG.
2. It is likely that in Education, activity in year 1 will have been to plan courses or put in place resources in order to ramp up activities in year 2, 2019-20 academic year. So a key task will be to work with Departments to provide necessary support and to monitor progress, help exchange learning experiences and to develop an overview of how sustainability is becoming embedded in the curriculum and project opportunities across the College.
3. Work with Estates, SCs and Departments/Institutes to identify ways to showcase or demonstrate new Imperial sustainability initiatives and concepts at South Kensington and other campuses.
4. Consolidate plans and build up activity for the White City campus.
5. Support the development of the Cleantech Innovation Cluster by linking in appropriate Imperial activity.

Communication and Networks

6. Establish an Imperial Sustainability Forum to showcase Imperial activity, increase awareness across the College, encourage debate on key issues, enable spreading of best practice across College and from outside, host talks from sustainability thought leaders to seed future activity.
7. Identify opportunities for collaborative projects with companies (eg existing partners), NGOs and other communities.
8. Continue to update website and identify other mechanisms to promote Imperial as a global sustainability and action on climate change leader.
9. Consider in more detail how our activity and priorities relate to the way Imperial is evaluated by Green League and engage more closely with other global sustainable university ranking schemes such as STARS and the UI Green Metric University Ranking.

Reporting and Review

10. With SLG, update rolling three-year plan for 2020-23, with budget requirements identified in time for the 2020-21 planning round. Approval from Provost's Board.
11. Produce end-of-year Sustainability Report, summarising 2019-20 activity and impact; evaluate progress against original targets and aspirations. Review by Provost's Board.

Year 3

It is not possible to anticipate activity in detail for year 3 of the plan, however, we anticipate activities to have ramped up to a higher level of ambition based on the success, activities and momentum built up during years 1 and 2.

Communication and Influence

1. Consider possibility of a major event to establish Imperial's credentials for sustainability achievement and thought leadership and use as a launch-pad for future initiatives.
2. Increase activity in policy, influencing and outreach as Imperial's leadership position and credibility increases.

Review and Update

3. A key activity of year 3, academic year 2020-21, will be to carry out an assessment on Imperial's sustainability profile and performance:
 - a. Improvement and major successes compared to 2018
 - b. Benchmarking against UK and global academic sector

c. SWAT analysis to identify future opportunities and priorities

4. Evaluate the effectiveness of the governance structure and work with SLC on recommendations for organisation and resources for cross-College sustainability activity in 2021 and beyond, which will maintain and enhance Imperial's sustainability profile and performance.
5. Produce end-of-year Sustainability Report, summarising 2020-21 activity and impact and progress over period 2018-2021.
6. Provost's Board to hold review of progress since 2018 and the operation and impact of the Greening Imperial activity since its inception.
7. Produce new three-year plan for 2021-24 in the light of this review, with budget requirements identified in time for the 2021-22 planning round. Approval by Provost's Board.