# A systems approach to increasing UK productivity

Chris W Clegg
Socio-Technical Centre
University of Leeds

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Author: Chris W Clegg

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The UK has a problem. Our national productivity is persistently low, and until recently, there seems to have been remarkably little collective energy invested in making substantial improvements. One of the good outcomes of the current economic crisis and recovery has been that, at last, the topic is beginning to attract the attention it merits (see for example, "Fixing the Foundations: Creating a more prosperous nation", 2015).

The average British worker simply doesn't make as much stuff as those from other major countries and for all the agreement that something must be done, there is little consensus. Debates about solutions tend to focus on big ticket national infrastructure policy designed to grandly sweep away obstacles and enable improvement. But the risk is that we obscure practical steps needed at the very heart of the problem.

Common sense tells us that a plan is needed, and quickly. The UK's economy rebounded following the global financial crisis, but by 2014 (the latest figures available) our workers were around 30% less productive[2] than those in the US, Germany and France – and their productivity levels were improving faster over time than ours. The Office for Budget Responsibility has warned that low productivity threatens the UK's economic recovery[3]; whatever you think about the idea of a "global race", it's best not to be stuck in the slow lane. One of the major problems is that these discussions are imbalanced, focusing almost exclusively on nationwide issues such as improving education and training, transport, high-speed broadband connectivity and banking and financial support.

**Five ways to fix the UK's productivity puzzle from the inside out**

In this article I propose five ways to improve the UK's productivity that were first published at the following URL: https://theconversation.com/five-ways-to-fix-the-uks-productivity-puzzle-from-the-inside-out-49395.

**Step by step**

Productivity is a multi-level and systemic issue. Take the decision to devolve substantial budgets to local government in Manchester[4] to improve provision of joined-up health and social care in the north-west of England[5]. This has the potential for massive impacts on public sector productivity, as well as on the productivity of large numbers of private sector suppliers.

And so, crucially, we need to improve productivity from within both the public and private organisations. Without this we will continue to languish near the bottom of the G8 league tables. What follows are five proposals which can help.

1. Make managers more responsible

Senior managers should be collectively responsible for improving productivity. This should be reflected in performance indicators and rewards. Productivity is not really about getting staff to work harder or longer, it is much more about designing working practices, processes and tools that help them work smarter and more effectively.

Organisations need to be redesigned to integrate processes, structures and people; focus on the delivery of strategy; and be agile enough to respond to changes dynamically and flexibly.

Improving productivity needs to be an explicit goal, measured and recorded using simple data which are made publicly available in annual reports for shareholders, the government and the general public.

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[2] http://www.ons.gov.uk/ons/dcp171778_416704.pdf
[3] http://cdn.budgetresponsibility.independent.gov.uk/EFO_November__2015.pdf
[4] https://theconversation.com/is-devo-manc-a-good-model-for-english-devolution-almost-41643
[5] https://www.gov.uk/government/publications/summer-budget-2015/summer-budget-2015

2. Empower employees

We are operating in a highly connected world where global forces can have a dramatic impact, often with little forewarning, and people and organisations work in networks. In these emerging networks, including technology-enabled social networks created by social media[6] and extended supply networks, new kinds of organisational structure are necessary. Hierarchical structures are needed to give stability for employees, and accommodate governance processes and new forms of leadership that encourage and empower employees and teams to take responsibility for improving productivity.

Take the example of a manufacturing plant. Under the "command and control"[7] way of thinking, machine operators are largely unskilled or semi-skilled but there are legions of supervisors, inspectors and maintenance engineers. Direct labour costs are low, but the indirect costs of staffing costs associated with large, complex hierarchies are prohibitive. With simpler, flatter hierarchies, staff are empowered[8], the operators working in teams are able up to undertake most (if not all) of these roles. Overall costs are lower and the system operates with higher quality, lower waste, shorter lead times and higher throughput. This is already happening in many organisations but the deal with staff needs to allow them to directly benefit from productivity improvements through reward and recognition. A top down target-based approach to one involving a set of jointly-owned, across the value chain, performance metrics is one that companies are adopting, regularly reviewed team targets to enable a company to become more agile.

3. Educate and train

If you are going to give staff more responsibility, then they need to be well educated, trained and developed. This is a responsibility shared by the government, through national initiatives, and each organisation. Most employees rise to the challenge[6], especially when they realise that their organisation and senior managers are serious and that it makes them more employable.

4. Value processes equally with technology

Senior managers need to appreciate the potential contribution of processes and technology and focus on well-designed processes and working practices, rather than expecting new technology to solve human problems. It's tempting to think a shiny new toy will make a factory work more efficiently or make trains leave a platform on time, but it's the total system that must work effectively.

The idea is that you create a virtuous circle whereby empowered staff become more knowledgeable, motivated, competent and productive. Simply introducing new pieces of technology is not the answer. As Jim Norton[9], board member of the Parliamentary Office of Science and Technology, said in 2006: "There is no such thing as an IT project."[10] Instead, there should only be "improvement projects" to boost productivity which change systems of working and which are likely, of course, to include a technology component. However, this is

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[6] For example, China's mobile text and voice messaging service, WeChat, has 300 million users, more than the entire population of the United States.

[7] http://www.theguardian.com/business/2007/dec/16/2

[8] http://onlinelibrary.wiley.com/doi/10.1111/1464-0597.00083/full

[9] http://www.profjimnorton.com/

[10] books.google.co.uk/books?id=7vZf61ZAO48C&pg=PA514&lpg=PA514&dq=jim+norton+There+is+-no+such+thing+as+a+technology+project&source=bl&ots=jHKRrj0ihO&sig=08CBi5uRRBQvM9sYPkl_XiYinE&hl=en&sa=X&ved=0ahUKEwiCiKL8y7rJAhXB7w4KHc_SAa0Q6AEIJTAB#v=onepage&q=jim%20norton%20There%20is%20no%20such%20thing%20as%20a%20technology%20project&f=false

difficult because people need to define such projects and predict how improvements from individual projects might impinge on others parts of the wider system: within and across levels.

5. Encourage innovation

Companies should be structured to encourage interaction, creativity and innovation among staff and with customers. It doesn't just sound nice; it makes a difference. Consider a company that sells aeroplane engines worldwide and is changing its business model to "power-by-the-hour"[11]. The company used to sell the engine and then sell separate maintenance contracts. Now, from the outset of a project, it signs deals to supply power over a lengthy operational period and it must predict maintenance costs for the lifecycle of the engine.

The knowledge held by maintenance engineers and customers around the globe is essential to predict and reduce lifecycle costs. The designers need to develop and share social networks with maintenance staff, and with customers. That way, you get interaction, creativity, innovation and ultimately, increased productivity.

**Conclusion**

It boils down to ending the command and control culture and giving frontline staff the opportunity and motivation to deliver high quality products and services on timescales that delight customers. These proposals aren't a quick fix, but there is hard evidence that they work[12]. These changes will also contribute to the apparent, current political consensus that we need to work towards a high-skill, high wage economy.

Above all, perhaps, the UK needs an understanding of the systemic problems of productivity. That will bring an acknowledgement that to boost productivity, we have to make multiple, coordinated interventions at multiple levels. No single policy, individual, group or profession will capture or understand all the elements and interactions in complex systems like this. And that means government and business having the patience and bravery to bring people from all levels into the project to make it work.

To summarise, the above ideas are offered to illustrate a systems approach, rather than as a specific blueprint for change. The logic of the approach is that the various stakeholders work together to discuss, design, implement and review an inter-connected and comprehensive set of actions using systems thinking and frameworks.

My personal view is that the current debates on productivity in the UK are incomplete in their coverage and appear to lack a sufficiently coordinated and collaborative approach. Developing and implementing a systems approach in this domain would help but will not be easy. It requires joined-up thinking and action across many organisations and stakeholders over extended periods of time. There is certainly a need and an opportunity for thinking of this kind. Is there sufficient motivation?

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[11] http://knowledge.wharton.upenn.edu/article/power-by-the-hour-can-paying-only-for-performance-redefine-how-products-are-sold-and-serviced/

[12] https://www.researchgate.net/publication/211382721_The_impact_of_human_resource_and_-operational_management_practices_on_company_productivity_A_longitudinal_study

## Appendix

In this analysis, I wish to offer and illustrate a systems view of how the problem of productivity can be addressed in the UK. A systems view incorporates five core assumptions:

- multiple interventions are required (there are no silver bullets);
- problems and actions are interconnected, thereby needing to be joined-up and mutually reinforcing;
- actions are required at several levels in the system, again requiring coordination;
- no single individual, group or profession will understand all the elements and interactions in complex systems of this kind; and thereby
- collaborative and inclusive approaches to problem definition and solution stand the greatest chances of success. This is not to assume that there will be stakeholder agreement on all the issues and actions.

I will illustrate the argument using two levels for analysis and action, one a national level and largely the province of the political process, and the other incorporating actions within individual organisations. Both are important, and interestingly, the latter often attracts relatively little national interest and this is certainly the case in the current debate.

There is a strong rationale for including an intermediate level, concerning citywide or regional actions. Thus for example, Manchester is due to receive devolved control of substantial budgets to improve the provision and delivery of joined-up health and social care in the north west of England. This has the potential for massive impacts on public sector productivity as well as on the productivity of large numbers of private sector suppliers.

I have excluded actions at a city- and/ or regional-level for simplicity and because this is an illustration of a systems approach rather than an attempt at a comprehensive analysis. As such, I offer an abbreviated and illustrative analysis of the kinds of actions that could be undertaken using the straightforward distinction between national actions and those required within organisations. To do this, I use a systems framework developed by the Socio-Technical Centre at the University of Leeds. Where a particular action coincides with George Osborne's plan for Productivity ("Fixing the Foundations: Creating a more prosperous nation", 2015) I indicate this with an asterisk*.

### Actions required at a national level

At national level, the kinds of action required are summarised in Figure 1.

#### Goals and Metrics

- Priority is given to productivity as a national political and economic issue*.
- Explicit national goals and metrics focused on productivity are agreed and reported at a national level.
- These goals and metrics are evaluated and reviewed as a continuing and long-term learning process. A key feature here is that no assumptions are made that the actions will be 'right first time', but that these issues and actions are under continuous, collective review.

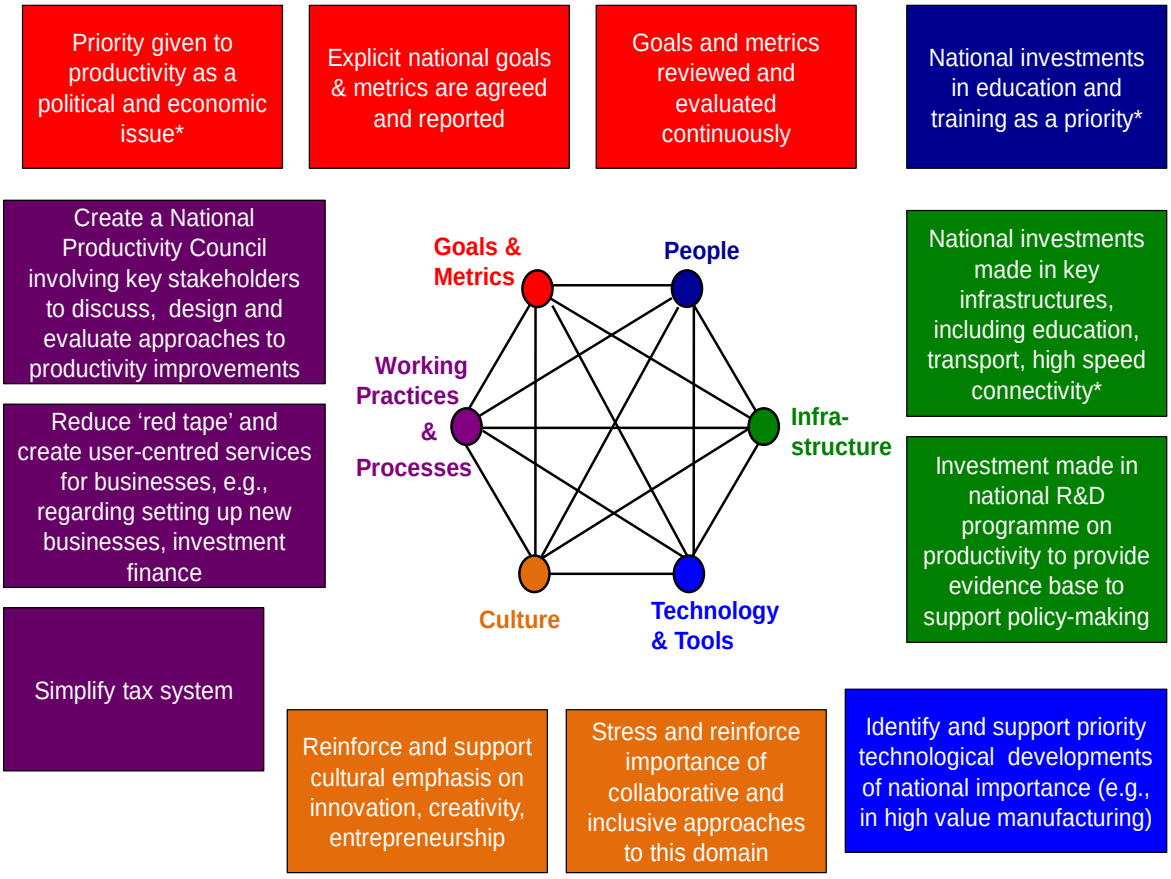


**Figure 1:** Actions at a national level to improve productivity

**People**

- National investments are made in education and training (including in universities, schools, technical/ vocational training, managerial education, apprenticeships, etc.)*. These investments are a national priority.
- We should acknowledge too that globally this is going to get tougher. As an example, we may currently have the most cost-effective university system in the world (and this is not to claim it is anywhere near perfect), but other nations are investing very heavily and catching up fast -- there is no room for complacency.

**Infrastructure**

- National investments are made to improve a range of critical infrastructures, including for example in education (as above), transport, and high-speed broadband connectivity*. (Osborne's plan also includes investment in new housing).
- The government should invest in a substantial national programme of R&D focused on understanding and improving productivity, aiming to help provide an evidence-base to support policy-making. This programme includes collating existing as well as undertaking new research at all levels in the system.

**Processes and Practices**

- We should initiate a National Productivity Council (or some such organisation) whose remit is to discuss, design and review approaches to productivity improvements (including inputs from political parties, different Ministries with a stake in the problems and actions, the Research Councils, and representative organisations such as the CBI, IoD, TUC). Such a Council would be a major client for the R&D programme identified above.

- Efforts are made to reduce ‘red tape’ and provide simple and user-centred processes for businesses, for example making it easy to set up new businesses and to obtain appropriate investment finance*.
- The tax system should be simplified and made easier to understand and use, aiming to promote the cultural emphases described below.

**Technology**

- Politicians work with other stakeholders to identify and support areas of technological change and development that are critical to the long-term future of the country. (For example, in high value manufacturing, transport, health and social care and education).* One could argue, this topic is incorporated in the Government initiative led by Innovate UK (Technology Strategy Board, BIS) regarding Catapults in a number of selected priority areas (such as high value manufacturing and future cities).

**Culture**

- There is a national cultural emphasis on innovation, creativity and entrepreneurship.
- There is recognition that these issues are best addressed through collaboration of the major stakeholders and this becomes part of the zeitgeist.

## Actions required within organisations

Turning now to actions required within organisations, examples are shown in Figure 2. (This level of analysis is not addressed in the Osborne Plan).

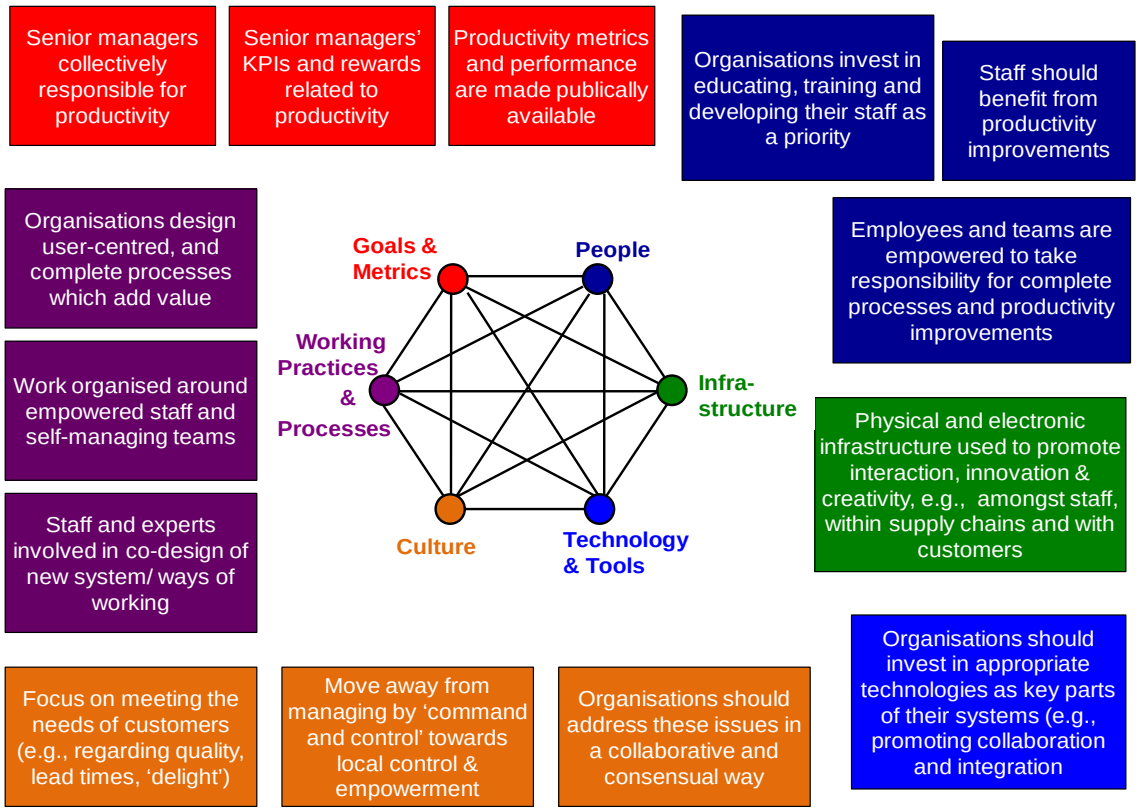


**Figure 2:** Actions within organisations (private or public sector) to improve productivity

**Goals and Metrics**

- Senior managers in both private and public sector organisations should be collectively responsible for improving productivity in their organisations.
- This should be reflected in their KPIs and how they are rewarded.
- Improving productivity needs to be an explicit goal, and be measured and reported using simple metrics which are made publicly available in annual reports for shareholders, for Government and for the general public.

**People**

- Employees should be empowered and teams developed to take responsibility for whole work processes and for productivity improvements.
- Take the example of a manufacturing plant – in the old 'command and control' ways of thinking, the machine operators would be largely unskilled or semi-skilled and there would be legions of supervisors, charge-hands, quality inspectors, maintenance engineers, etc. Direct labour costs would be low, but the indirect costs prohibitive. When a problem occurs, time is wasted finding the person with the right skill-set to fix it. When staff are empowered, the operators, sometimes working in teams, are skilled up to undertake these roles. Overall costs are lower and the system operates more effectively, with lower waste, shorter lead times and higher throughput.
- Organisations need to invest in their people, who need to be well educated, developed and trained. This is an organisational priority.
- Staff should benefit from productivity improvements (e.g., through reward and recognition).

**Infrastructure**

- The physical and electronic infrastructures within organisations should be designed to encourage interaction, creativity and innovation amongst staff, across supply chains and with customers.
- For example, take the case of the engineering company already described in Section 5. In this scenario, the knowledge held by maintenance engineers and customers is essential to predict and then reduce lifecycle costs. This requires new patterns of interaction, creativity and innovation.

**Processes and Practices**

- Organisations need to focus on productivity through well-designed, user-centred and complete processes which add value.
- Work is organised around empowered staff and self-managing teams.
- Staff and relevant experts need to be actively engaged in the re-design and improvement of working practices and processes

**Technology**

- Whilst acknowledging that 'There is no such thing as a technology project' (Professor Jim Norton of the Parliamentary Office of Science and Technology, 2006) systemic improvements are likely to include technological components and, with that mindset, organisations will need to invest in appropriate new technologies as a key component in improved systems.
- Such investments are likely to include technologies which promote collaboration and integration within organisations, across supply chains and with customers.

**Culture**

- The organisational culture (‘the way we do things here’) should be focused on customers and on enabling front-line staff to deliver high quality products and services on timescales and in ways that delight customers.
- There needs to be a concerted move away from managing by ‘command and control’ towards managing through ‘local control and empowerment’.
- Organisations need to address these issues in as collaborative and consensual way as possible, with managers, staff and their representatives working together to improve productivity.

Four further comments should be made on the above lists. First, they are very general and each item would need comprehensive elaboration to guide action and this is true at both levels. Many of these involve substantial policy domains in their own right; for example the need to invest in our national transport infrastructure, a massive endeavour. Second, the problem of productivity, its analysis and the solutions apply to both private and public sector organisations. Third, many of the potential actions will attract different views from different groups. To take two brief examples, at the macro level, the political parties may agree on the need to improve secondary school education in the UK but fiercely contest how this can be done. At the organisational level, managers and staff may agree on the need to improve working processes and practices but disagree on the details of the new designs and on how the benefits of improved productivity should be distributed. A systems view does not assume a unitary perspective, rather acknowledging the likelihood of pluralist views, thereby reinforcing the need for continuing discussion. Fourth, the implication is that this topic is a multi-level problem requiring multi-level actions and coordinated analysis and action.