



Film London | Moneypenny | Greenshoot

Case study on integrated paperless solutions for the filming industries

Project commencement: March 2019 - September 2019





Overview

The purpose of this report is to analyse the paper usage of a TV drama production, track the number of A4 pages printed through information provided by the production accountant and analyse the savings in paper, using integrated paperless solutions provided by Money Penny. Alongside the **financial savings** we have calculated the associated **carbon footprints**.

Data was provided by **Production A**, their use of paper and an analysis of the associated paper supply chain.

Global carbon reduction targets

If we want to avoid the worst impacts of global warming, scientists say we have to cut global carbon emissions nearly in half by 2030. That was the major finding of the UN Intergovernmental Panel on Climate Change report released last October (2018).

The UK already has a 2050 target - to reduce carbon emissions by 80% under the terms of a new government plan to tackle climate change. That was agreed by MPs under the Climate Change Act in 2008.

The actual terminology used by the government is "**net zero**" greenhouse gases by 2050. That means emissions from homes, transport, farming and industry will have to be avoided completely or - in the most challenging examples - offset by planting trees or by sucking CO2 out of the atmosphere.

With an ever-increasing number of documents within a film supply chain, coupled with the urgent need to move towards a low carbon economy, the film industry has a duty of care and must play its part.

Context

According to The Environmental Paperwork Network (EPN) and their report called, The State of The Global Paper Industry | Shifting Seas: New Challenges and opportunities for forests, People and the Climate. (Report attached in the appendix), use of paper has risen by 400% in the last 40 years.

Paper manufacturing is one of the worst offenders when it comes to pollution. The paper industry is the fifth largest consumer of energy in the world. This over-use of paper has a huge impact on a company's carbon footprint – not just from the chopping down of trees to make the



paper, but also on the fossil fuel power used for printing, and the chemicals involved along with the water footprint and waste footprint.

Statistics

The range of data can be confusing, as it is varied and extensive globally. But to offer context against these statistics - to produce one tonne of paper, it is estimated (and varies on the type of tree and manufacturing process, but as an average) it takes between 1,151 - 2,500 litres of petroleum or up to 680 gallons. In turn, to make just 1 piece of A4 paper requires 10 litres of water.

According to Susan Kinsella, an internationally recognised leader in environmental paper and sustainable procurement at conservatree (see appendix) who advises that when equating trees to paper amounts there are no simple answers. "Many people have heard the statistic that a ton of recycled paper saves 17 trees. The "17 trees" number was popularized by conservatree when it was a paper distributor, based on a report to Congress in the 1970s. It was calculated for newsprint, which is made in a totally different papermaking process from office and printing papers. Reviewing a variety of sources laid out in her analysis she estimates that 1 ton of uncoated virgin (non-recycled) printing and office paper uses up to 24 trees and 1 tree makes 16.67 reams of copy paper or 8,333.3 sheets.

Acknowledgements

Special thanks goes to Film London for enabling this ground-breaking report and to the partnership group at Green Screen EU who support collaboration and knowledge sharing in the areas of sustainable development and environmental best practice. Greenshoot have been collaborating and working in partnership with Film London since 2014.

During that time, they have developed the education platform Green Screen, a social enterprise scheme helping to reduce the environmental impacts of the production industries. Over 320 filming productions have adopted the programme in the past five years.

Money Penny

We are grateful to Money Penny for the expertise and their collaboration during the assessment period in providing much needed accounting data from a live six part TV drama and to the production accountant on the show for their expertise, agreement and collaboration with this report.



Money Penny, established in 1980, provide specialist financial services to the global entertainment industry. **Money Penny's paperless solution** is the only global production software that is integrated with both accounting, payroll and production workflow, and can be used completely paper-free.

Data collection

This analysis has been compiled in collaboration with Money Penny using clear and transparent data taken from **Production A's** cost reports, budget and production accounts over a 6 month period from March 2019 - September 2019.

Scope

In order to calculate the total paper used on the production, Money Penny collated data from the production's supply chain, including the production budget and invoices, hired printer invoices and data collected from the printers, using the printer companies invoicing, which allows clear tracking of all paper usage. The following takes into account the physical production process of Production A, but does not include post production, distribution or exhibition.

Please review in the appendix for data reference and further reading.

Data analysis collected for Production A:

- Crew size 220
- Shooting weeks 10

Paper used across Production A - the following is considered an industry standard workflow in regards to paper usage.

Production Paperwork

Scripts	Schedules	Movement orders
Administration documents	AD Reports	Risk assessments
Script sides	Unit and supplier lists	Production diaries

Production Paperwork digitised on Production A

Call Sheets	Purchase Orders	Invoices
Petty cash	Contracts	Time Sheets
Payslips	All accounting reports	Bank Statements



In the supply chain of Production A, the additional associated paper processes have also been taken into account.

Supply chain

- Printer inks used on the production and their carbon footprint
 - Storage of sensitive and confidential paperwork required for Production A - 3 years
 - Refuse and waste costs and associated carbon emissions, including transport
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Carbon Footprint | Notes

In calculating a carbon footprint, the first step is to determine which emissions are in scope' for the production or production process. According to the guidelines for carbon neutrality, scope 1 and 2 emissions MUST be calculated and it is best practice to include all measurable and significant scope 3 emissions. The Greenshoot Carbon Retirement calculator benchmarks all 3 scopes.

The Department for the Environment, Food and Rural Affairs (DEFRA) calculates emissions resulting from certain activities, such as fuel burning and electricity generation. In the past, their calculations have included ONLY the direct emissions related to these activities, for example the emissions from burning fuel used for heating.

They also calculate the whole supply chain of emissions resulting from an activity; for example, when concerned with the burning of fuel, this will include the storage and distribution of fuel prior to its combustion (as well as the direct emissions related to burning it).

The Greenshoot Carbon Retirement calculator includes these indirect emissions as well as the direct ones, and is therefore set to include them using 2019 DEFRA emission factors, along with IPCC guidelines.

CO₂e

CO₂e (or CO₂ equivalent) includes not only the **carbon dioxide** produced by an activity, but also the impact of other gases emitted by that activity that have a detrimental effect on the environment. These include methane and nitrous oxide. The following carbon footprint is measured in tonnes of CO₂e (a tonne is 1,000 kilograms).



Results

Printing on **Production A** was largely scripts, accommodating six episodes and each episode totalled 50 script pages. Scripts alone accounted for around 50,000 of the total pages printed. The accounts department were entirely paperless, the production team did make an effort by implementing a solution to distribute the call sheets electronically daily and call sheets were only printed on request through an 'opt in' initiative.

The following results will offer the reader encouraging savings, from an environmental impact perspective and through potential increased cost savings if an integrated paperless system is adopted.

Paper | Paper products | Print and printers | Waste removal and processing | Storage

Production A

Total number of printed A4 paper = **99,548 sheets of A4 paper**

Savings by the accounts department + electronic call sheets = **42,166 sheets of A4 paper**

Number of **A4 pages** of paper if the accounts department had not been paperless = **141,714**

There was a healthy saving of 33% in carbon and cost using integrated paperless solutions

Carbon impact | carbon savings

Carbon emissions for **Production A** | across paper usage, associated printing processes

15.38 tonnes of CO2e

12 - 16 trees est.

1,151 litres of petroleum est.

550,000 litres of water est.

Were used in the production of the paper and paper products.

A saving of 5.17 tonnes of CO2e by the accounts department from using an integrated paperless solution



Carbon Savings explained

The carbon savings by going paperless on a film or TV production is considerable and this report offers a unique insight, coupled with the ethical imperative to reduce deforestation makes this a compelling report. Deforestation is the act of converting a primary or secondary forest area for another use by cutting, burning or clearing existing trees and plants. Deforestation is commonly used to create new space for agriculture, livestock grazing and urban development. It is also the after effect of logging activities.

Financial savings

The estimated costs saved if the production went 100% paperless equates to £20,142.90 and the savings on this production by the accounts department going paperless is an encouraging £13,225.43 - approximately 65% savings by going paperless. No paper was archived on this production.

It should be noted that these cost savings do not take into account the time saving at per person power rates. The production accountant estimated this at 1-2 days per week in the accounts department alone and there would also be savings in production because of online contracting and purchase orders which could be further enhanced with a full paperless solution.

Conclusion

Production teams with determination and resolve will see a big impact in both carbon and financial savings. It is clear to see within this report the environmental impact of our continued paper usage, but positive that there are paperless solutions being taken up across the industry. Imagine these results multiplied by all productions in the UK let alone globally.

This production accounts department was able to operate paperless using the Moneypenny software innovations including:

- Online purchase orders
- Online contracting
- Online document storage
- Online document distribution
- Online approvals



The document distribution and archiving could have been extended to production to save all or a significant percentage of their paper use. At least by adopting an opt in protocol for all printing especially scripts.

This report is the very first of its kind to support the filming production industry's campaign to reduce paper usage and specifically to highlight its overall carbon impact on a medium sized film production.

It provides ground breaking support to the industry's move towards a low carbon economy, the paperless sector and ultimately the introduction of the virtual production office. Implementation of these initiatives would be a game changer with respect to paper usage, cut in waste and ultimately supporting carbon emission reduction.

The conclusions are not definitive as research continues into what is a brand new area of carbon efficiency within the production industries.

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Appendix

About Greenshoot

Founded in 2010, Greenshoot is an award-winning independent sustainability consultancy for the creative industries. We collaborate with filming productions and industry business to minimise how the sector can negatively affect the environment; comply with applicable laws, regulations, and other environmentally oriented requirements; and continually improve in the above. The partners at Greenshoot all work in the production industries at senior levels.

Since 2010 Greenshoot have supported the mission of the United Nations and global Sustainable Development Goals focusing on core principles of education and collaboration.

Along with our digital online educational platform Green Screen, we can integrate a bespoke environmental action plan that conforms and supports other international sustainability schemes and carbon footprint tools like, PGA Green, ECOProd in France and BBC/BAFTA Albert+



We offer practical hands on support to demystify, assist and develop learning in the field of sustainability and environmental best practice. With proven results.

As a social enterprise, we support a wide variety of filming productions and creative businesses. Our aim is to enhance the skill set of the next generation of filmmakers with environmental best practice to support the government's mission of a low carbon economy.

Further reading

Susan Kinsella - Reference 24 trees are required to make 1 tonne of paper.

<http://conservatree.org/learn/EnviroIssues/TreeStats.shtml>

DEFRA

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs>

Water Footprint

https://waterfootprint.org/media/downloads/Report46-WaterFootprintPaper_1.pdf

Huge range of water impact in paper production and there is a large range of variants.

Intergovernmental Panel on Climate Change

https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

Environmental Paper Network (EPN)

https://environmentalpaper.org/wp-content/uploads/2018/04/StateOfTheGlobalPaperIndustry2018_FullReport-Final-1.pdf

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<https://www.worldatlas.com/articles/what-is-the-environmental-impact-of-paper.html>