THE LINUX FOUNDATION | Research

World of Open Source

Europe Spotlight 2022

Exploring the State of European Open Source Innovation, Opportunities, and Challenges

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By Colin Eberhardt, Graham Odds, Matthew Dunderdale, *Scott Logic*

Foreword by Gabriele Columbro, General Manager, *Linux Foundation Europe*

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Foreword

When I look back at my first steps in technology, fresh out of university in Italy at the very end of the millennium, I can point to a distinct moment when I realised I was in love with open source: the day I became a committer for the Apache Software Foundation. There was something so rewarding about getting that very sought-after @apache.org email address, about being able to learn from so many of the smartest developers in the world, about feeling you are part of a movement that produces collective value.

I decided to pursue a career in open source in the Netherlands, first as a consultant and then in commercial open source product companies. There, I experienced being compensated for my open source work for the first time, something I feel fortunate about and, regrettably something that the OSS ecosystem still struggles with 15th years later. I also experienced challenges in balancing the community nature of open source and the commercial dynamics that, predictably, such a valuable asset sets in motion.

After leaving Europe almost ten years ago, I landed in the heart of Silicon Valley, the home of most commercial open source success stories in the last decade. It was here that I found myself on the non-profit side, leading FINOS, the Foundation bringing open source to one of the most conservative industries in the world: financial services. My main lesson in building a 'vertical' community as an impartial arbiter is always to strive to create the proper governance, culture, and, critically, sufficient funding for the open collaborative process—and not 'just the code'—to create a positive-sum game for all constituents. Every day I work with each constituent, whether individuals or corporate contributors or adopters, and—even more importantly in a regulated industry—policymakers and regulators, to ensure they realise proportionally more value than the sweat equity they invest.

In other words, I hypothesise that the 'romantic,' commercial, and social natures of open source can coexist. When open collaboration is done right—through foundations or otherwise—every constituent has value to gain, and that's the only way to ensure the sustainability of this awesome digital commons OSS communities maintain every day.

"I hypothesise that the 'romantic,' commercial, and social natures of open source can coexist."

My first investment as General Manager for Linux Foundation Europe, together with the fantastic Linux Foundation Research team, was to validate these hypotheses and learn more about the region's challenges and opportunities directly from the extended European open source ecosystem. After all, Europe is a hub of global open source activity and leadership: besides boasting a large open source grassroots community, Europe leads in academic citations on open source[1] and clearly recognises its critical role in the economy and society.[2]

This research report is the culmination of a Europe-wide collaboration led by the exceptional team at Scott Logic. It provides fascinating insights to support the European open source ecosystem, opportunities at the crossroads of policy and technology, and offers a clear and current lens on the state of open source software, hardware, and standards in Europe. It identifies key challenges for open source contribution, consumption, and governance within industry sectors, particularly the public sector, education, and financial services, as well as for individual countries.

We had the honour to partner with several European organisations to amplify the distribution of the survey. I want to personally thank the many friends and leaders from organisations who helped us achieve a truly representative dataset, reinforcing the principle that when we work together, we create better outcomes.

We hope this report will inspire future conversations about the social value of open source in Europe, enable a better understanding of the unique nature of the European open source ecosystem, and direct our collective energies toward increased collaboration to ensure its long-term sustainability and an ever greater collective value creation.

And I look forward to working with the European open source community, enterprises, and the public sector to help overcome the gaps this report identifies. Working together, we can unleash the true social innovation value open collaboration has the potential to enable on a global scale.

Gabriele Columbro
General Manager, Linux Foundation Europe

OPEN SOURCE IS A MECHANISM FOR EUROPEAN INNOVATION AND VALUE CREATION across industry sectors, with the creation of standards and interoperability being the most widely cited benefits.

WORLD OF OPEN SOURCE: EUROPE

Across Europe, personal contributions are **MOTIVATED BY LEARNING AND FUN** rather than by a desire to further career advancement.

WORLD OF OPEN SOURCE: EUROPE

OPEN SOURCE IS THE APOLITICAL KEY to fostering a digital commons while enabling European nations to plot their own courses in the digital world.

WORLD OF OPEN SOURCE: EUROPE

CLEAR LEADERSHIP—via a structured OSPO or dedicated employees contributing to open source—**PAYS DIVIDENDS,** with micro- and enterprise-scale organisations leading the way.

WORLD OF OPEN SOURCE: EUROPE

During the last 12 months, 47% of survey respondents said that **THE VALUE THAT THEY DERIVE FROM OPEN SOURCE IS CONTINUING TO GROW.**

WORLD OF OPEN SOURCE: EUROPE

In addition to cost savings, **INDEPENDENCE FROM CLOSED-SOURCE SOLUTIONS** drives open source adoption.

WORLD OF OPEN SOURCE: EUROPE

57% of respondents have **POLICIES THAT OPENLY ENCOURAGE OPEN SOURCE (OS) CONSUMPTION.** However, the imbalance between consumption and contribution challenges OS sustainability.

WORLD OF OPEN SOURCE: EUROPE

While 63% of respondents agree that organisations should consume OSS to improve security, **IMPROVED GOVERNANCE OF OSS CONSUMPTION AND BEST PRACTICES IS NEEDED** to safely realise its value.

WORLD OF OPEN SOURCE: EUROPE

CLEARER OS CONTRIBUTION POLICIES WERE REPORTED BY RESPONDENTS WORKING FOR THE LARGEST ORGANISATIONS (>10,000 employees), than those working for mid-sized organisations.

WORLD OF OPEN SOURCE: EUROPE

THERE IS A POLICY IMBALANCE, with 35% reporting a lack of a clear contribution policy compared with 17% reporting a lack of a clear consumption policy.

WORLD OF OPEN SOURCE: EUROPE

THE PUBLIC SECTOR IS FAILING TO FULLY CAPITALISE ON OPEN SOURCE. Contribution is encouraged for only 29% of public sector respondents (versus the survey mean of 46%), and there is a notable lack of a clear policy.

WORLD OF OPEN SOURCE: EUROPE

SIGNIFICANT REGIONAL DIFFERENCES EXIST in the perceived value of open source and permissive consumption and contribution policies.

WORLD OF OPEN SOURCE: EUROPE

Executive summary

This report covers a wide range of themes, topics, and concerns relating to open source within Europe. In this section, we describe some of the most compelling conclusions from our findings. We hope that these conclusions, backed by the data from our research, will provide individuals, organisations, and governments with tangible advice that allows them to better unlock the growing value of open source software.

Our goal with this report was to better understand the dynamics of open source across regional lines, beginning in Europe. Recent studies from the Linux Foundation have found that the European community actively participates in the research process. Building on this engagement, we undertook a survey and several interviews to explore the emerging themes.

"Our goal with this report was to better understand the dynamics of open source across regional lines, beginning in Europe. Recent studies from the Linux Foundation have found that the European community actively participates in the research process. Building on this engagement, we undertook a survey and several interviews to explore the emerging themes."

Open source is a mechanism for collaboratively creating value and innovating across Europe.

The term 'open source' was first coined in 1998 to describe the following engineering approach that had been quietly growing for the past decade: openly sharing source code to allow a more open and collaborative approach to software development. What started as a cultural phenomenon among 90s bearded hackers has transformed into something of inarguable commercial value and an essential part of the software industry.

It has become a dominant force at the forefront of innovation and the creation of shared value through industry collaboration. Those who responded to our survey and interviews almost unanimously echoed the message that open source is valuable to the current state and future of their sector. That said, while those in information technology are riding the wave of open source innovation and collaboration, other sectors are lagging behind, with the education and public sectors needing further investment.

We noted an emerging theme that Europeans have a 'romantic' relationship with open source, while those in North America have a more commercial relationship. A repositioning of open source to unlock more commercial value without losing the community-minded aspects would benefit the European economy.

The imbalance between consumption and contribution challenges the sustainability of open source.

Our research painted a very positive picture for open source, with a perceived increase in the derived value and activity from consumption (incorporating open source code into a product) and contribution (helping maintain open source code, primarily by becoming part of the development team). However, when we analysed the details, a clear gap emerged.

Regarding contribution, a significant proportion of respondents indicated a lack of a clear policy at their organisation or that they simply did not know what the policy was. In contrast, very few saw the same challenges when it came to consuming open source. This gap widened further in some sectors (telecommunications, public, and finance and insurance sectors).

Open source is suffering from growing sustainability challenges; in very simple terms, organisations tend to 'take' more than they 'give'. The damaging effects of this are experienced most visibly through recent high-profile security incidents, where the root cause was a lack of open source maintenance. However, the less visible effects are a growing unease within the community.

Clear leadership pays dividends, with micro- and enterprise-scale organisations leading the way.

The route to unlocking value from open source goes far beyond simply creating the right policies. For the leaders in open source, it has become deeply embedded in their organisational culture. Achieving this requires clear and visible leadership.

Our research showed that organisations with a structured approach to leadership via an OSPO, or simply visible leaders, have employees who are encouraged and empowered to contribute to open source. Furthermore, the value that these organisations derive from open source is significantly greater.

Notably, organisations at the two extremes of the scale (<10 or >10,000 employees) have an OSPO or visible leader. Mid-sized organisations tend to lack both. There is clear potential for these organisations to follow in the footsteps of very small or very large organisations, which creates an open source leadership structure that empowers and supports their employees.

The public sector is failing to fully capitalise on open source.

We observed variations when looking at our survey data across industry sectors; however, differences in the public sector are some of the most noteworthy.

Within the public sector, we are increasingly seeing open source consumption being formally prescribed by national and international government bodies across Europe. Furthermore, much of the code that the public sector produces is now shared in the open, which is primarily for reasons of transparency.

However, despite the consumption policies and increasing number of public sector-founded projects, we found this sector to be an outlier across many aspects of our research. There is limited inner source activity, which indicates a lack of collaboration between public sector organisations, and a lack of a clear contribution policy, which potentially suggests an overly narrow appreciation of open source's value and that it is simply a mechanism for the transparency of work rather than for collaboration and collective value creation.

With the public sector having so much to gain from open source—a theme that is firmly echoed by our survey respondents—much needs to be done to create a cultural shift. Policies that simply mandate consumption and that 'code must be shared' miss out on much of the value that open source has to offer.

Open source is the apolitical key to fostering digital sovereignty.

Digital sovereignty—nations' ability to act independently in the digital world—is high on political agendas across Europe: from the European Commission[3] to national governments.[4] North America drives and owns so much of our digital world in either the form of the products, services, and infrastructure that we depend on or the maturity of the skills, capability, and experience necessary for digital creativity and innovation. The risks of such dependency are highlighted by geopolitical incidents, such as the continued curbing of tech sales to China by U.S. administrations[5] and the knock-on consequences surrounding gas supplies following Russia's invasion of Ukraine. There is a clear need to create and sustain the mechanisms that will enable Europe and European nations to plot their own courses in the digital world.

"Open source exists and operates beyond politics, which inclusively drives value for all."

Our survey responses reinforce the notion that open source is a powerful mechanism for innovation, collaboration, collective value creation, and ultimately bringing the vision of the 'digital commons'[6] to life. There are strong beliefs that industry standards and interoperability benefit the most from open source and that there should be further investment in open source alternatives to technology monopolies. Critically, open source exists and operates beyond politics, which inclusively drives value for all; breeds digital products and services that anyone can use; ensures space for constraint-free innovation and collaboration; and creates rich environments for skills and capability development.

Introduction

Open source has become a dominant force within the software industry, and as software continues to wade into almost every industry sector, open source software has followed. Open source is somewhat amorphous and can be used to describe many different things: from code to community and from commercial value to a 'common good'.

With digital technology, as in so many other domains, our cultural values fundamentally shape our attitudes, perspectives, and approaches. That's why we wanted to look at Europe in isolation—to identify whether there is a distinctly European perspective on open source and the qualities that distinguish it.

This study is more than academic for the following reasons:

- For industries that are undergoing their own digital transformations, gaining a better understanding of open source and the opportunities that it creates gives them a tangible competitive advantage.
- For governments, there is a need to understand the growing contribution that open source makes to their economy. This allows them to shape policies and make strategic investments that capitalise on this rapidly growing community.

This study explores the 'state of open source' across Europe and builds a comprehensive picture by examining the current levels of activity through consumption and contribution, inhibitors, motivators, and opportunities. It was conducted by Scott Logic and Linux Foundation Research via a combination of a survey (circulated in May 2022), which yielded 1,198 usable responses, and interviews with 15 individuals (conducted between May–Jun 2022) from a range of industries and countries.

Our research spanned a wide variety of open source activities: from consumption (incorporating open source projects and libraries into your own products and services) and contribution (submitting code back to open source projects, helping with documentation, and general community engagement) to creation (taking code or intellectual property [IP] that was developed in-house and making it available as an open source project).

The open source value proposition

"If open source vanished, or was unavailable, it would have a big impact; it is critical."

— LUKE PAGE, TECHNICAL ARCHITECT, SAXO BANK

At its most basic level, open source is about creating software and then giving away both the product and code for free. Understandably, the business value of giving away your source code is not immediately apparent.

Despite this, the software industry has generally embraced open source, with multiple reports indicating that open source has become a dominant force. The recent Census II report[7] from Linux Foundation Research estimated that open source software constitutes 70–90% of any given modern software solution.

Our research suggests that the value of open source to organisations is continuing to grow. Most respondents indicated that the value that they perceive from open source has increased over the last 12 months (**FIGURE 1**).

It is worth noting that there is significant variance in this sentiment across different European nations (**FIGURE 2**). Respondents in Germany and the Netherlands reported a greater perception of an increase in value, while Italy indicated that the sentiment had remained the same. Since there is currently no broadly established quantitative approach to measuring the value of open source, we are unable to provide an objective insight into these geographic differences in perceptions.

Our research further reinforced the long-term, future significance of open source software, with 91% of respondents indicating that open source is valuable to the future of their sector (**FIGURE 3**). Notably, 58% of respondents work in sectors other than information technology, which demonstrates that the value of open source is apparent to individuals across a broad range of industry sectors.

"You cannot make any competitive software platform today without making use of open source software."

—MIRKO BOEHM, HEAD OF SOFTWARE, MBITION/MERCEDES-BENZ

FIGURE 1

Comparison of the perceived change in the value that organisations have derived from open source over the last year.

Source: World of Open Source Europe Spotlight Survey, Q16.

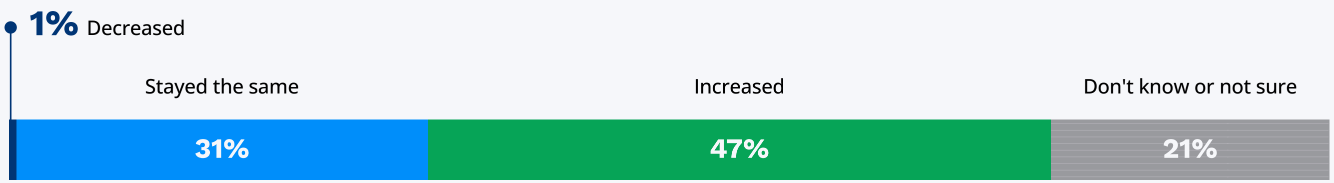


FIGURE 2

The perceived change in the value that organisations have derived from open source over the last year across various countries.

Source: World of Open Source Europe Spotlight Survey, Q16, by leading European Countries.

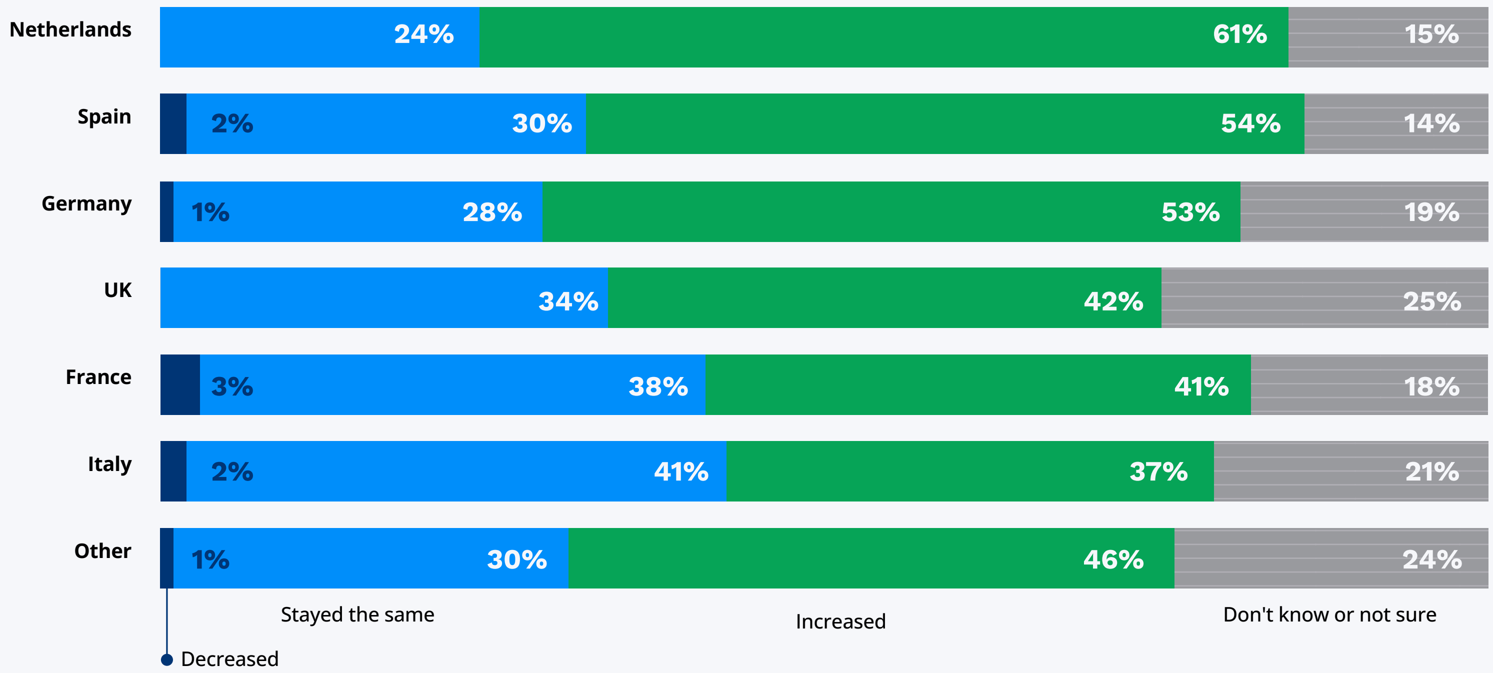
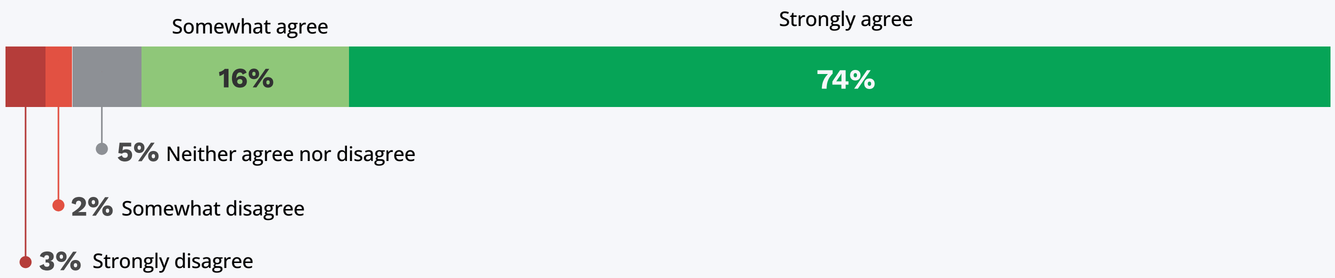


FIGURE 3

The extent to which the respondent perceives open source to be valuable to their sector.

Source: World of Open Source Europe Spotlight Survey, Q35.



The term 'open source' is somewhat imprecise. Although it can be interpreted in a narrow sense as merely indicating that some source code is being made available openly, it is more often interpreted as something much broader. However, this broader interpretation lacks a formal definition. To some, open source is a business model, whereas to others, it is fundamentally about free software. It can be interpreted as a description of a set of assets, a mindset and way of working, or a community of people.

The rest of this report examines in detail the open source maturity of the respondents' organisations and where and how they derive its value. With the value of open source already well understood, the report explores how we might accelerate the full realisation of that value. Finally, it highlights opportunities to grow and expand the value of open source to private and public sector organisations across Europe.

"Open source software is useful for when you want to drive something that is bigger than your company."

— ALOIS REITBAUER, CHIEF PRODUCT OFFICER AND HEAD OF OPEN SOURCE, DYNATRACE

Open source consumption

In this section, we focus on the consumption of open source within organisations, which is the use or incorporation of open source code, components, and tools in the creation and operation of an organisation's digital products or services. We find the following:

- Generally, organisational policy encourages open source consumption. However, the bigger an organisation is, the more likely it is to attach limiting conditions.
- Increasingly, open source consumption is formally prescribed in the public sector across European nations.
- The biggest driver of open source consumption is the desire to avoid vendor lock-in.
- What organisations perceive as limiting their open source consumption is diverse, but there are noticeable differences in sentiment between information technology and non-information-technology organisations, with the latter feeling more limited.
- Organisations feel that open source consumption would increase if investment or efforts were focused on improving the formality of support around open source.
- There is a need for further research to explore the open source producer side of the relationship to identify where efforts should be focused to better support consumers' needs.

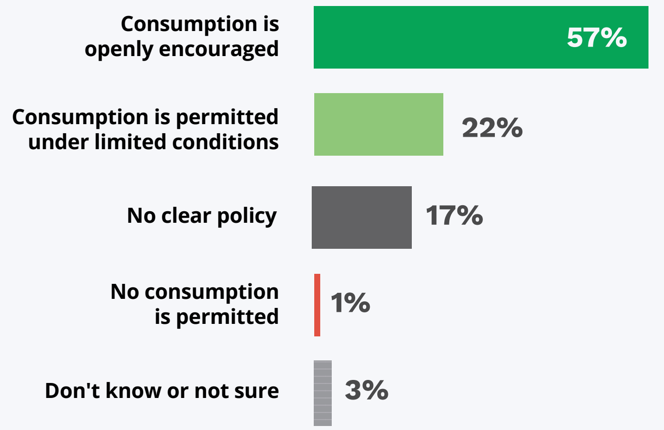
Organisational policy on open source consumption

One of the typical first steps for organisations to start realising the full benefits of open source is to establish a policy on consumption. In our survey, 79% of respondents indicated that they have a policy that permits open source consumption to some degree (**FIGURE 4**). Only 1% indicated that their organisation has a policy prohibiting open source consumption, but we could not discern any clear common factors within this small cohort. Clearly, the door is wide open to open source.

FIGURE 4

The extent to which open source consumption is permitted at the respondents' organisations.

Source: World of Open Source Europe Spotlight Survey, Q13.



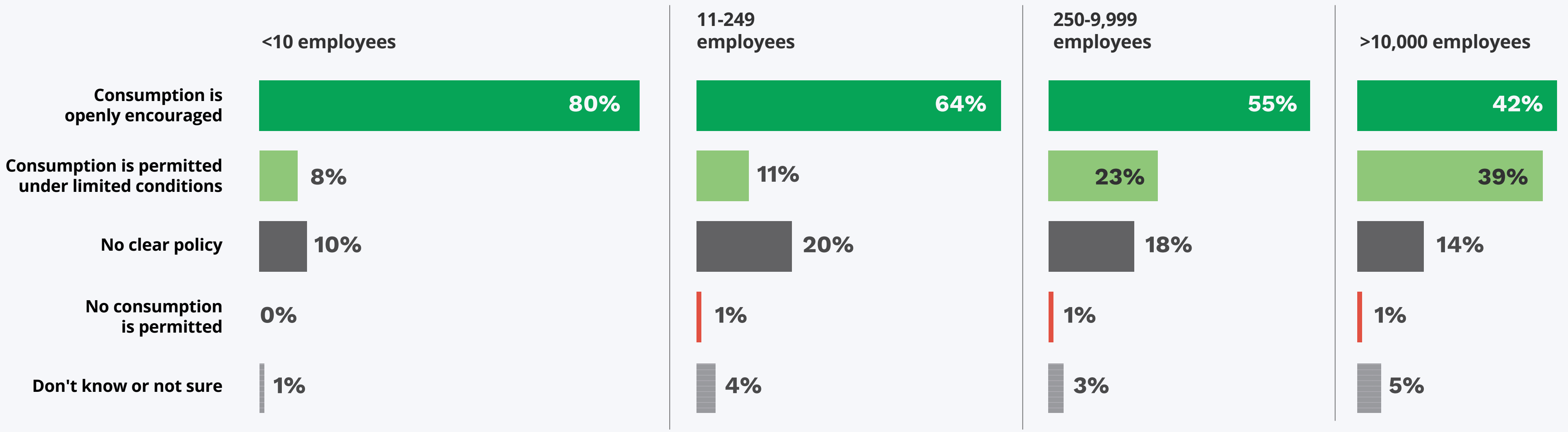
Delving deeper into these responses, we see a pattern that suggests that the bigger an organisation is, the more likely it is to attach limiting conditions to open source consumption (**FIGURE 5**). This mirrors a typical pattern among all types of policies, where larger organisations are required to be more prescriptive to better guide larger numbers of individuals and more diverse cases.

Our survey responses show that organisations with no clear policy on open source consumption suffer from stagnation and uncertainty on the topic. Of those organisations, 41% report that the value that they derive from open source has stayed the same over the last year (versus 30% of organisations that do have some form of policy), and 29% say they do not know how that value has changed (versus 18% of organisations that do have some form of policy).

FIGURE 5

Comparison of the extent to which open source consumption is permitted at the respondents' organisations by organisation size.

Source: World of Open Source Europe Spotlight Survey, Q13 by Q9 (Company Size Classes—aggregated)



Within the public sector, we are increasingly seeing open source consumption being formally prescribed by national and international government bodies across Europe. Here are a few high-profile examples of the different forms that this is taking:

- **European Commission** — Its Open Source Software Strategy 2020–2023 'puts a special emphasis on the sharing and reuse of software solutions, knowledge and expertise, as well as on increasing the use of open source in information technologies and other strategic areas'.[8]
- **United Kingdom** — The public sector digital standards assurance process' Technology Code of Practice sets out that project plans must show how the use of open source has been considered.[9]
- **Germany —** Germany has launched a Sovereign Tech Fund to support the development, scaling, and maintenance of digital and foundational technologies. The goal of the fund is to sustainably strengthen the open source ecosystem, with a focus on security, resilience, technology diversity, and the people behind the code.[10]
- **Italy** — Agenzia per l'Italia Digitale (AgID), an Italian government department, promotes and provides guidance on the use of open source ahead of proprietary software within Italy/the public sector.[11]

"Europe benefits from significantly more promotion from government bodies to encourage open source adoption."

— PETER ZAITSEV, CEO, PERCONA

Open source consumption unlocks diverse value

The high-level rationale for consuming open source is often simplistically boiled down to it being free, thereby lowering costs. Approximately a full 64% of respondents agree that this is a driver for increasing consumption in their organisation (**FIGURE 6**). Interestingly, this number rises to 73% among respondents whose organisations are not currently maintaining an open source project, which suggests that the strength of this driver is influenced by an organisation's open source maturity. However, there are also other deeper, broader ways that open source drives more and different value.

"Reduced costs have traditionally been a real driver for adoption; now, independence [from proprietary solutions] is a real driver for adoption."

—PETER ZAITSEV, CEO, PERCONA

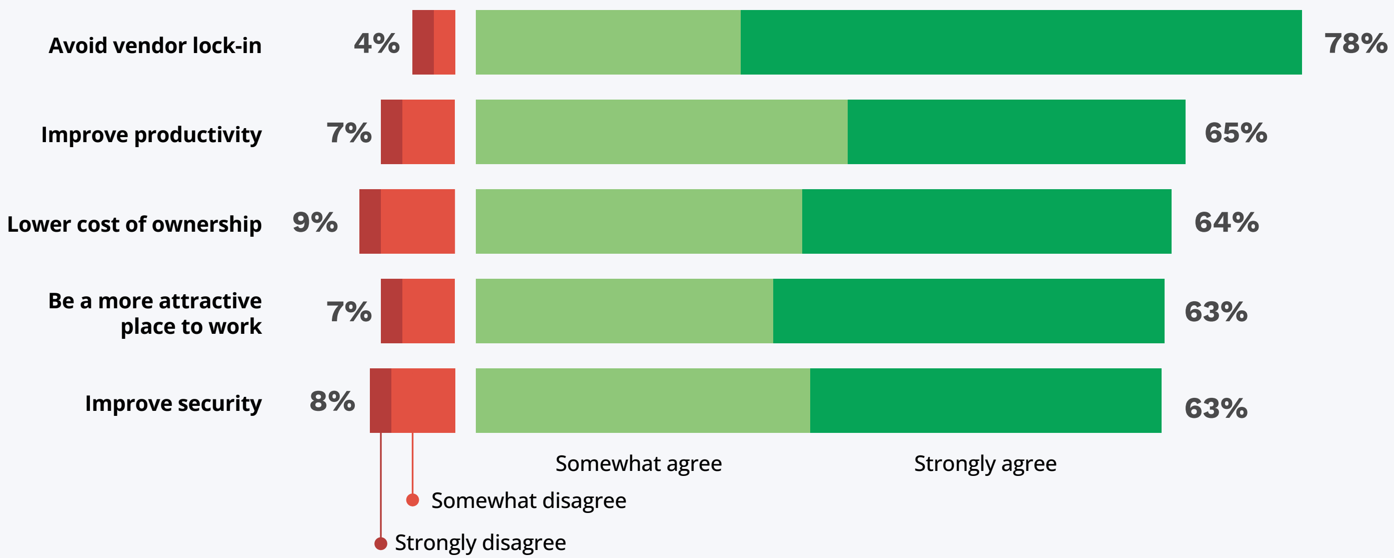
Our research shows that the most significant reason for increasing an organisation's open source consumption is to avoid vendor lock-in (78% of respondents agree) (**FIGURE 6**). Vendor lock-in refers to the situation where you are essentially stuck using a particular product or service, regardless of quality, because switching away is impractical. Open source can be seen as a mitigation for this risk, as its openness inherently creates alternative provision routes and typically eases migration if switching. At the very least, it removes the potential of direct or indirect exit fees. However, open source rarely provides full mitigation of all concerns that are typically associated with vendor lock-in. For example, should the maintainer of a project choose to sunset the project or walk away from it (a recent survey of open source maintainers by Tidelift suggests that more than half of them have considered quitting[12]), organisations will face the potentially significant cost of taking on the maintenance of the project or migrating to an alternative solution.

The sentiment that organisations should increase their consumption of open source to improve security—agreed with to some extent by 63% of respondents (the lowest level of agreement in our survey) —warrants a note of caution. Open source software has many security challenges, particularly surrounding supply chain vulnerabilities and transitive dependencies. A recent global survey[13] highlighted that only 18% of organisations have strong controls to address the security of their transitive dependencies on open source software, and this increased to just 24% for direct dependencies. There is a distinct need for organisations to improve the

FIGURE 6

Levels of agreement with stated reasons why organisations should increase the consumption of open source.

Source: World of Open Source Europe Spotlight Survey, Q17.



"Psychological barriers to wider adoption remain, principally the notion that open source software may be less professionally developed than proprietary efforts, or that it may lack support."

—BASTIEN GUERRY, FREE SOFTWARE UNIT (AKA OSPO) LEAD, ETALAB/DINUM, FRENCH GOVERNMENT

maturity of their approach to governing and supporting open source software consumption to safely and securely realise its value.

Overcoming inhibitors of open source consumption

The picture of what gets in the way of organisations unlocking the diverse value of open source consumption is, unsurprisingly, a complex one. Different organisations in different circumstances and at different stages of open source maturity face different limiting factors.

However, our research shows noticeable differences in sentiment between information technology and non-information-technology organisations. The latter show a more general feeling of limitation, with a particularly pronounced sense that a lack of supporting training and guidance limits their organisation's consumption of open source (**FIGURE 7**).

This sense of limitation that is imposed by a lack of supporting training and guidance is even stronger in those organisations that do not have a clear policy on open source consumption (74% of those respondents agree or strongly agree versus 39% of all organisations). A lack of understanding of the non-technical value proposition also becomes a clear limiting factor in these organisations (65% agree or strongly agree versus 38% of all organisations).

By contrast, organisations where policy permits open source consumption but only under limited conditions appear to view licensing or IP concerns as their biggest inhibitor (67% agree or strongly agree versus 37% of all organisations). These organisations also flag external regulations or other

“Particularly medium-to-large sized organisations (in Germany, often family-owned) lack an understanding of their dependency on software in general, let alone an understanding of OS versus proprietary.”

—PETER GANTEN, CEO, UNIVENTION & CHAIRMAN, OPEN SOURCE BUSINESS ALLIANCE

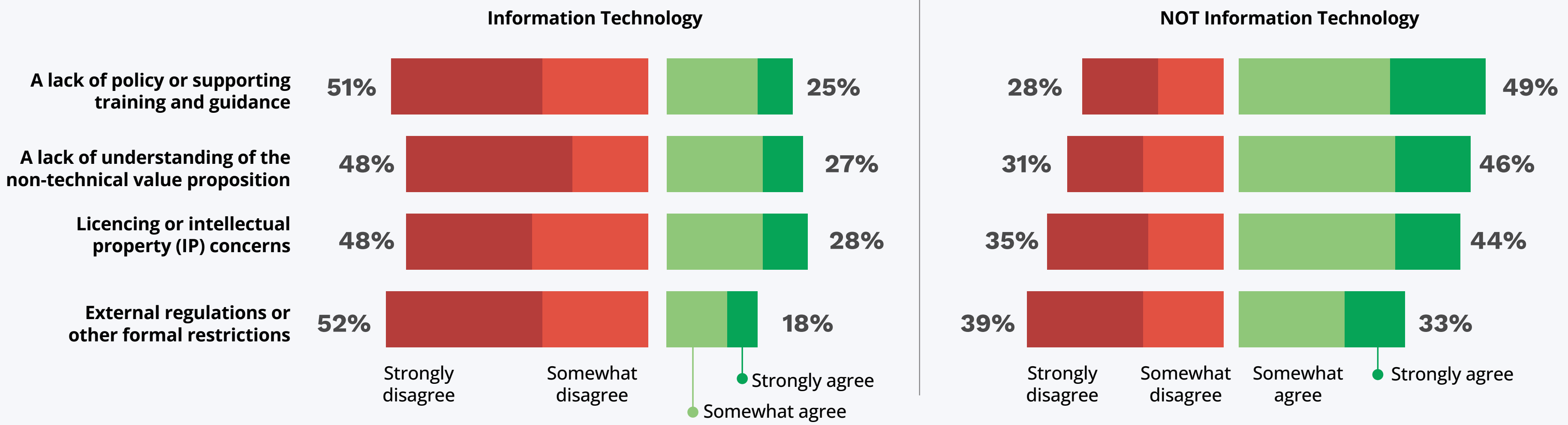
“Need to build bridges from both sides of the OS relationship to better connect them: OSPOs from the consumer side; foundations and alliances from the creator side.”

—FREDERIK BLACHETTA, CHIEF STRATEGY OFFICER, DATAPORT

FIGURE 7

Levels of agreement that factors are limiting the consumption of open source at the respondent’s organisation, comparing information technology employers with non-information technology employers.

Source: World of Open Source Europe Spotlight Survey, Q18 by Q8 (Information Technology IT vendor versus non-Information Technology vendor).



formal restrictions as a significantly greater limiter than other segments (43% agree or strongly agree versus 27% of all organisations).

Not unsurprisingly, the sentiment regarding where investment or effort should be focused to increase open source consumption largely reflects the limiting sentiment (**FIGURE 8**). However, the broad pattern is that improving the formality of structure and support around open source is key. Organisations with no clear policy on open source consumption showed a particularly strong desire for investment or effort across the board.

Our interviews highlighted an area for consideration that was not tackled in the survey, namely where open source producers should focus their efforts to better support consumers' needs. We recommend that further research should be conducted to explore this particular aspect and the general open source producer/consumer relationship.

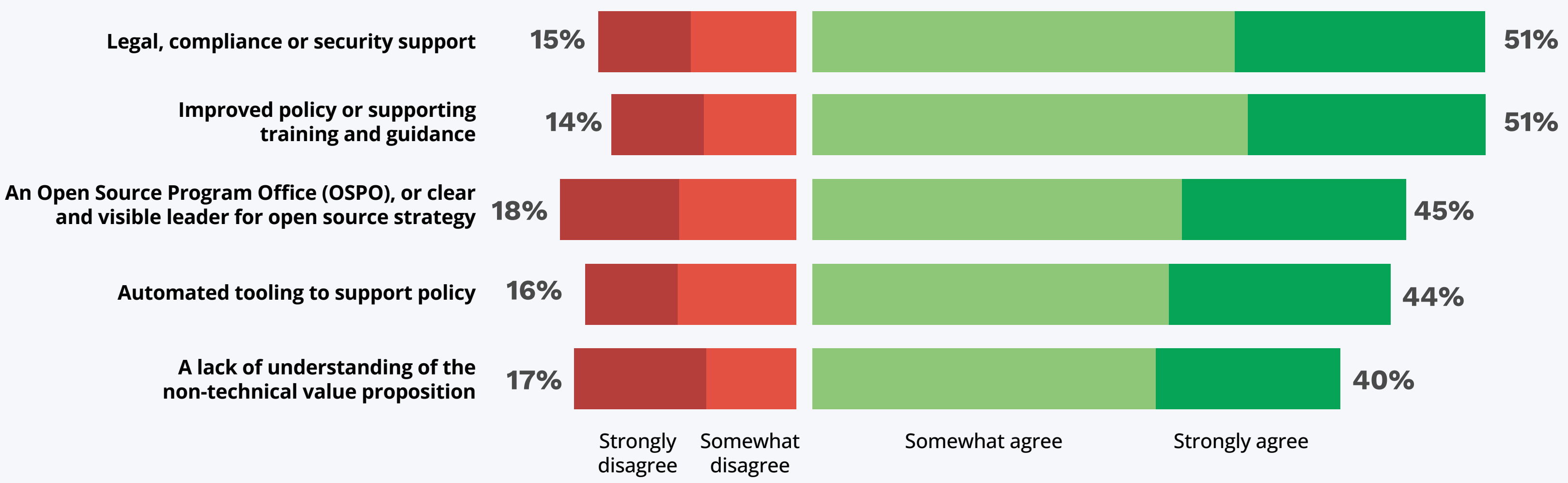
"Open source needs to be ready for enterprise customers...open source maintainers are sometimes asking to be protected, or expecting to be chosen first by, for example, government entities...but they need to improve the quality of the offer in the round versus proprietary options, not just the quality of the product."

—STEFANO PAMPALONI

FIGURE 8

Levels of agreement that focused investment or effort spent on a given area would increase consumption of open source at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q19.



Open source contribution

In this section, we focus on contributions made to open source projects by individuals, with a particular focus on those made on behalf of organisations. For clarity, we consider 'contribution' to include any form of effort made in support of an open source project—for example, providing design assets or answering questions in addition to writing code. Here we find the following:

- A significant number of organisations indicated that their open source contribution is increasing.
- There is an imbalance between contribution and consumption policies, with 35% reporting a lack of a clear contribution policy, compared to 17% reporting a lack of a clear consumption policy.
- Contribution policies are highly dependent on organisation size, with micro-organisations having the most permissive policies, while mid-size organisations have policies that lack clarity.
- Contribution policies vary considerably across industry sectors, with the extent to which contribution is encouraged varying wildly. The public sector is a significant outlier, where contribution is not encouraged, and there is also a notable lack of a clear policy.
- There is a widespread understanding that open source contribution improves the quality of projects that organisations depend upon, and a growing consideration that long-term investment is vital to the future of both open source and an organisation's own products.
- There is a broad range of factors that potentially limit open source contribution, and there is a lack of consensus regarding the most pressing.
- The return on investment for open source contribution is widely understood; however, this is not being met with sufficient allocated time for open source contribution activities.
- Learning and development is the strongest motivator for the significant number of respondents spending personal time contributing to open source projects.

The rising tide of contribution

The survey data clearly shows that the perceived contribution is rising for a significant number of organisations, with 29% of respondents indicating that the time and effort that their organisations allocated to open source contribution over the last year had increased. This is a stark contrast to the 4% who believed that this amount had decreased (**FIGURE 9**). Understandably, several respondents (30%) are unsure, as evaluating the net contributions from a large organisation is a challenge. There are projects looking to better quantify this, such as the Open Source Contribution Index.[14]

The perceived growth in open source contribution is reflected in contribution policies, where 46% of respondents are aware that it is their organisation's policy to 'openly encourage' contribution, while only a small number of organisations actively prohibit contributions (3%) (**FIGURE 10**). However, many respondents (43%) indicated that there was a lack of a clear policy or that they simply did not know what their policy was. In contrast, only 20% responded that there was a lack of policy or uncertainty regarding consumption of open source.

There is clearly much more work required to address the imbalance between consumption and contribution policies.

FIGURE 9

Perceived changes in contribution effort over the last year at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q24.

"Everything that is central to you making business should be under your control...If you are not actively contributing to these projects, or interacting with the communities, you lack this control. This is a problem for your business."

—ALOIS REITBAUER, DYNATRACE

Contribution policies show significant sector variations

The management of policies differs considerably based on the organisation size. Small organisations tend to have lightweight and nimble policies, whereas policies in larger organisations tend to be more heavyweight and structured, which reflects the need to communicate and coordinate a more sizable workforce more effectively.

Analysing open source contribution policies across organisations of various sizes has revealed some interesting patterns. Within micro-organisations (<10 employees), the message is overwhelmingly positive, with 71% openly encouraging contributions (versus a mean of 46%) (**FIGURE 11**). This decreases for larger organisations, coupled with a decrease in clarity (i.e. respondents who answered 'don't know or not sure' or 'no clear policy'). Interestingly, those who work for the largest organisations (>10,000 employees) indicated that the contribution policies were clearer than those in the mid-sized organisations.

Without clear policies, it is highly unlikely that employees will contribute to open source. There is evidently an opportunity for mid-sized organisations to improve the clarity of these policies or simply to communicate them more effectively.

"Lack of clarity around aspects of open source, in particular the impacts of different forms of licensing, or the implications of making contributions back into the open, has limited the ability to take full advantage of open source."

—CORNELIUS SCHUMACHER, OPEN SOURCE STEWARD, DB SYSTEL GMBH

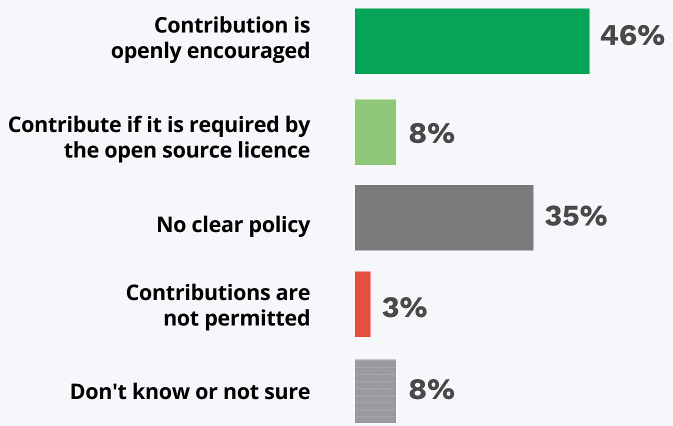
We observed additional significant differences when looking at the contribution policies across various industry sectors. We found that the finance and insurance, education, and public sectors all fail to encourage contributions (25%, 28%, and 29%, respectively, encourage contributions versus a mean of 46%) (**FIGURE 12**). Additionally, these sectors tend to lack clarity in their contribution policies. For the public sector, this is in stark contrast to the growing number of government policies that mandate that public sector organisations open source their own work. A lack of a contribution policy potentially suggests an overly narrow appreciation of open source's value—that it is simply a mechanism for transparency on work rather than a mechanism for collaboration and collective value creation.

> *"If you want to own your future, you need to own your engineering."*
>
> —PHILIPPE ENSARGUET, ORANGE BUSINESS SERVICES

FIGURE 10

Presence and permissiveness of a contribution policy at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q20.



Contribution drivers

We explored the motivations that drive organisations to contribute to open source projects. The most frequently cited motivation was to improve the overall quality of the open source software that the respondent's organisation depends upon, with 85% agreeing or strongly agreeing that this is a motivating factor (**FIGURE 13**). This is a clear acknowledgement that organisations wish to directly invest in the projects that they depend upon as opposed to resolving issues in private (e.g. via a private fork). Our interviews elaborated on this theme to reveal a more long-term mindset, with organisations wishing to contribute to guide or simply 'have a say' in the long-term roadmap of projects that they depend on. Several interviewees not only saw this as a 'nice to have' but also considered it to be vital to the long-term success of their own organisation.

Open source contribution is not merely limited to sharing source code; the term 'contribution' can be more broadly used to describe any activity that benefits an open source project as a whole. We explored the nature of these open source contributions by asking about the

FIGURE 11

Variations in contribution policies based on the organisation size.

Source: World of Open Source Europe Spotlight Survey, Q20 by Q9 (Company size classes—aggregated).

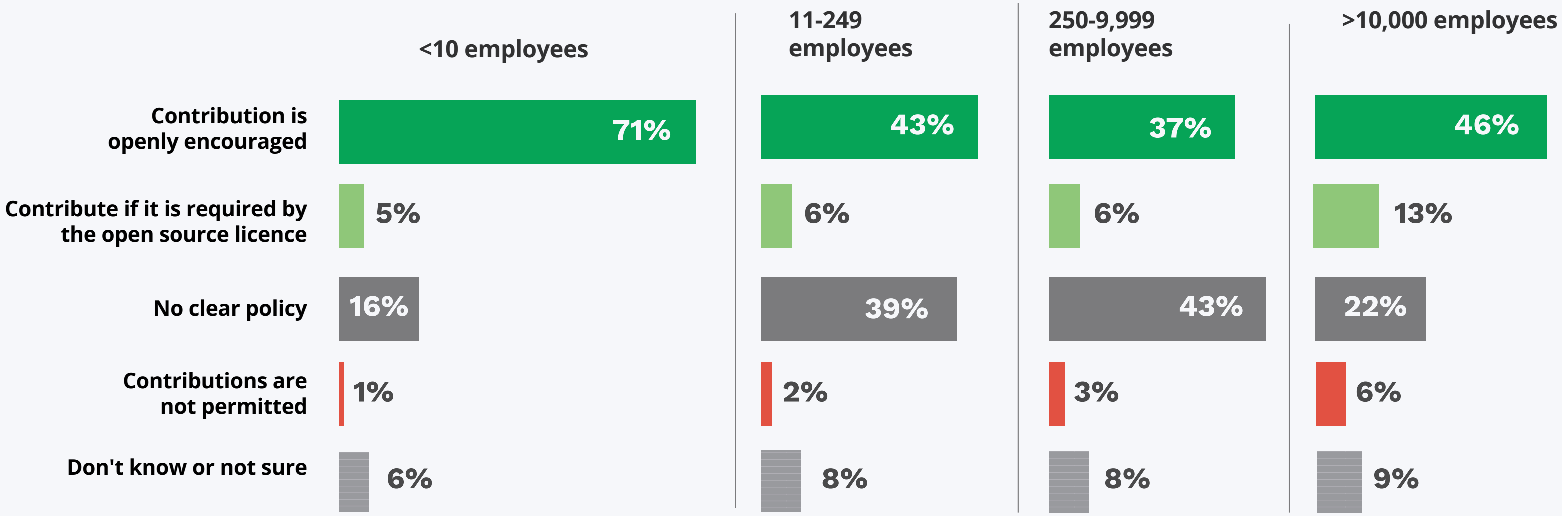


FIGURE 12

Variations in contribution policy based on the organisational sector.

Source: World of Open Source Europe Spotlight Survey, Q20 by Q8 (for leading industries).

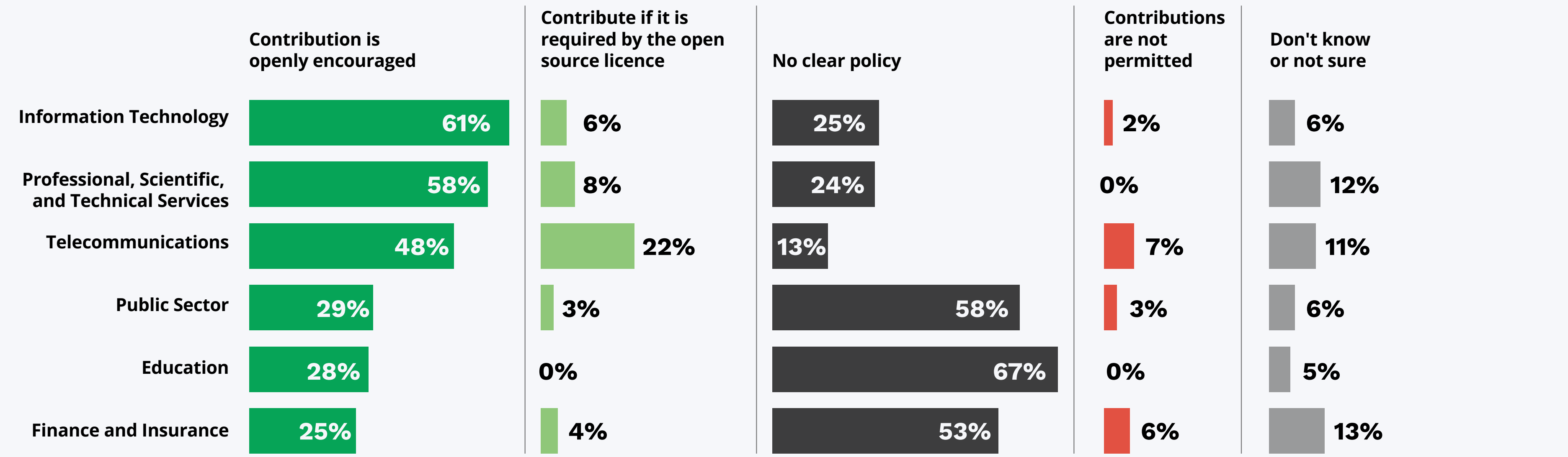
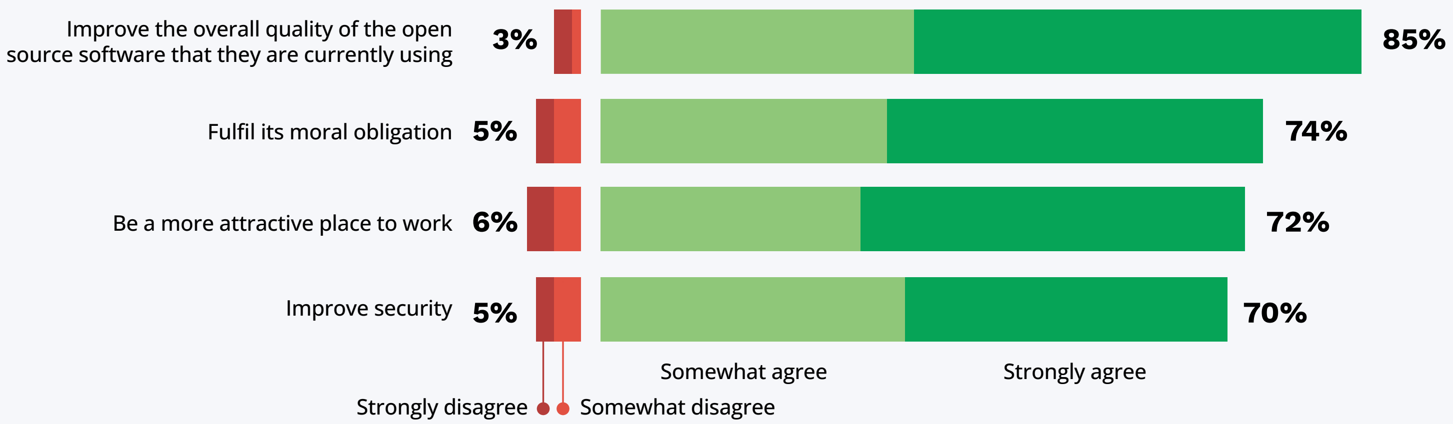


FIGURE 13

Motivations for open source contribution at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q26.



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"There is a cultural expectation within the UK public sector that you should be entirely focused on direct delivery of projects in front of you, so no time or space is afforded for contribution to create or support indirect value. Contribution at best (and very infrequently) occurs within organisational silos."

—JOSSE TEDONE, CONSULTING TECHNICAL ARCHITECT, CENTRAL DIGITAL & DATA OFFICE

various activities that employees had undertaken. The most commonly reported open source activity was reporting issues, as indicated by 63% of respondents (**FIGURE 14**). A significant number (48%) had taken a step further and contributed code.

Similar patterns of contribution were seen across the various industry sectors. However, there was a noticeable lack of activity from those working in the finance and insurance sector, with 49% indicating that they had not made any open source contributions (compared to a mean of 28%). This lack of open source contribution from the finance and insurance sector is further reflected by the lack of 'creation', i.e. open sourcing and maintaining their own codebases. Within this sector, 42% of respondents were unaware of their organisation open sourcing any of their proprietary code compared to an average of 29%.

The sector-specific challenges within the financial services sector that likely limit contribution activity were explored in a 2021 Linux Foundation Research[15] report, which found that a 'fear of leaking IP' was the limiting factor, with the results becoming even more acute for the largest organisations (>30,000 employees).[16]

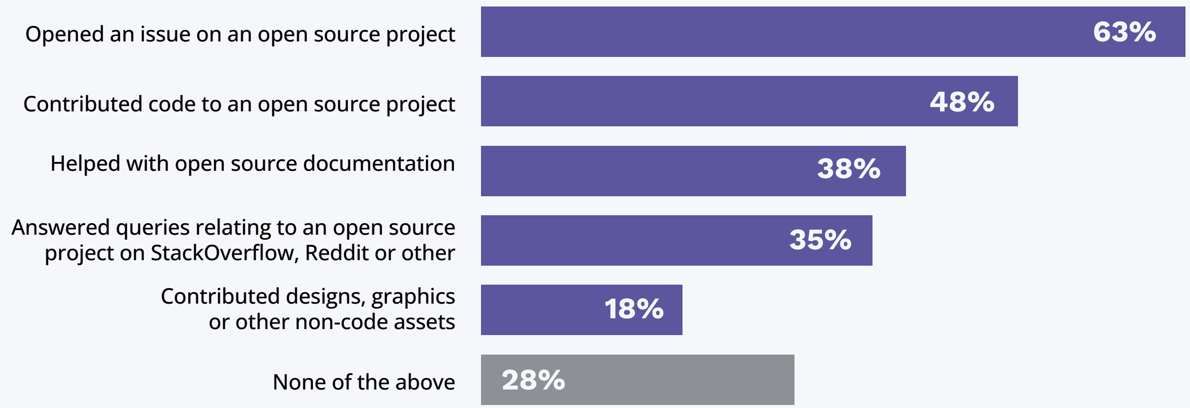
Overcoming contribution obstacles

Exploring limiting factors more broadly indicates a clear lack of return on investment was a significant concern for almost twice as many people as compared to those that did not think it inhibits contributions. Beyond return on investment, there was a lack of consensus about whether other factors are a concern (**FIGURE 15**).

FIGURE 14

Contribution activities undertaken by the respondent on behalf of their organisation.

Source: World of Open Source Europe Spotlight Survey, Q25.



Delving further into the data, we found some patterns within specific sectors, including education, finance, and insurance, which indicates that a lack of policy or training materials was a shared concern.

Turning our attention to how organisations can increase their open source contribution (**FIGURE 16**), the most significant investment that an organisation can make was clear—allocate employee time for open source contributions. The previous question indicated that the 'return on investment' needs to be made more clear to organisations. However, this clarity regarding the return on investment does not translate into a sufficient allocation of time.

> *"Public Departments developing software are required to make code open source; however, this sharing can be unstructured, and not always readily taken advantage of."*
>
> —BASTIEN GUERRY, FREE SOFTWARE UNIT (AKA OSPO) LEAD, ETALAB/DINUM, FRENCH GOVERNMENT

Time spent on contribution

We explored how much time people spend working on a range of activities that are either open source or a pathway into open source (**FIGURE 17**). 54% of survey respondents indicated that they spend time contributing to projects that are managed by other teams within their organisation. This practice is often termed 'inner source' and is considered a pathway into open source collaboration, as it involves addressing similar concerns and adopting similar ways of working (e.g. return on investment, solving collaboration challenges). A smaller number of respondents (38%) spend time at work contributing to projects that their organisation has open sourced, and a similar number (42%) contribute to third-party open source projects. In each case, the contribution frequency is relatively modest, which is to be expected, as organisations need to balance time spent on contributing to open source versus internal activities (building their own products).

Looking at variations across sectors, the public sector is a notable outlier, specifically with respect to inner source activity, with only 37% of people spending any time contributing to projects that are managed

FIGURE 15

Levels of agreement that factors are limiting the willingness to contribute to open source at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q27.

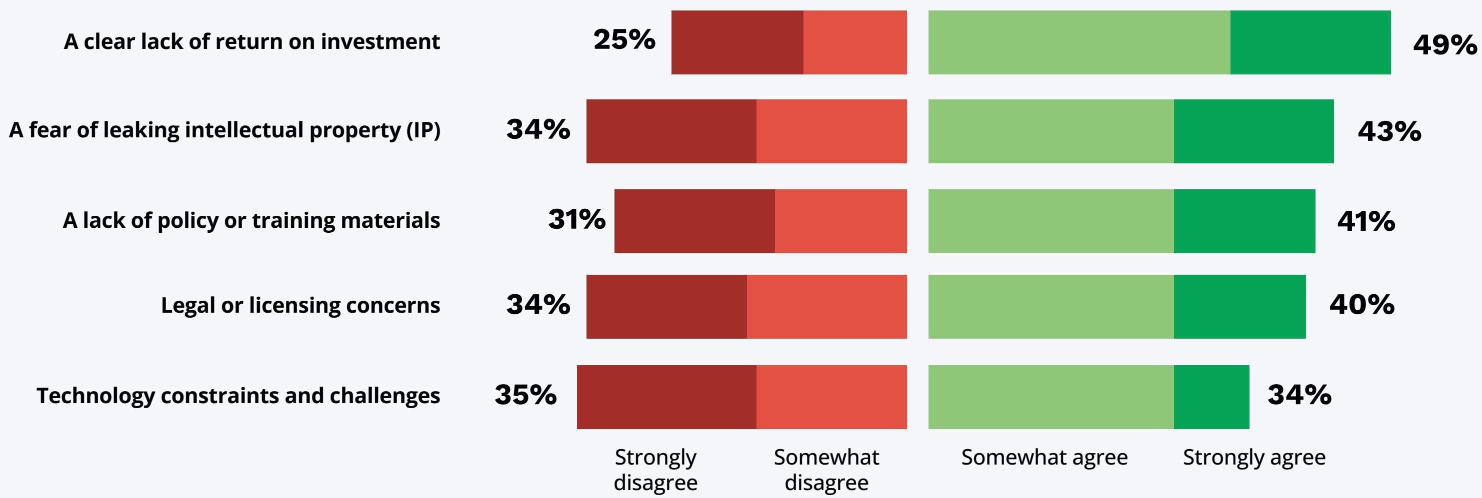
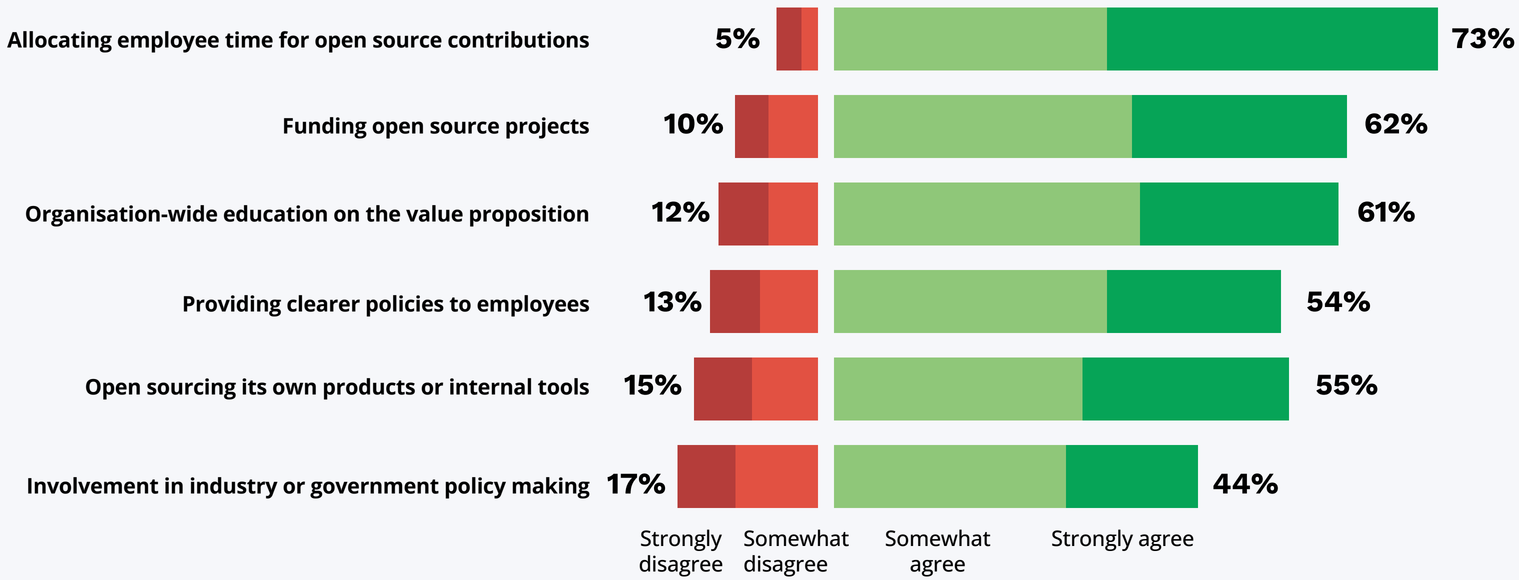


FIGURE 16

Levels of agreement that focused on investment or effort spent on a given area would increase the contribution to open source at the respondent's organisation.

Source: World of Open Source Europe Spotlight Survey, Q28.



by other teams within their organisation (compared to an industry-wide average of 54%).

At the employee level, the desire to work in open source has been widely reported, and our survey reinforced this message. We found that 65% of respondents were actively involved in open source outside of work. We explored their motives for spending 'personal time' contributing to open source (**FIGURE 18**) and found that learning and personal development was a leading motivator, followed by the joy of working with peers in the community. Notably 'improving my career opportunities' was the weakest motivator—the respondents were learning for fun rather than career motivation.

FIGURE 17

How much time respondents spend at work on open source related activities.

Source: World of Open Source Europe Spotlight Survey, Q30-32.

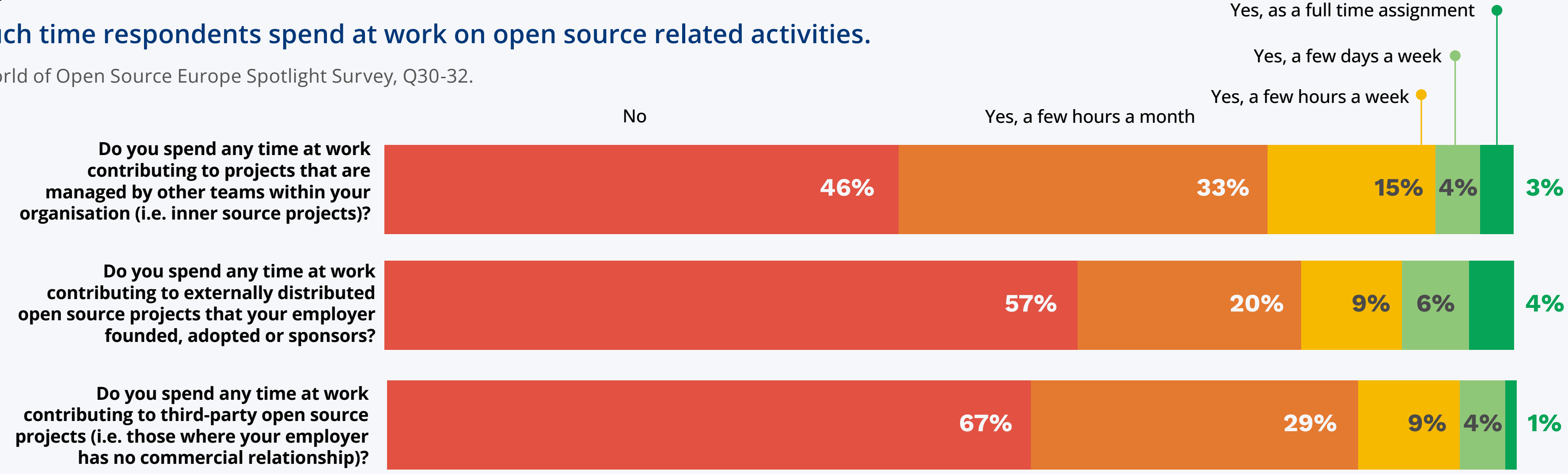
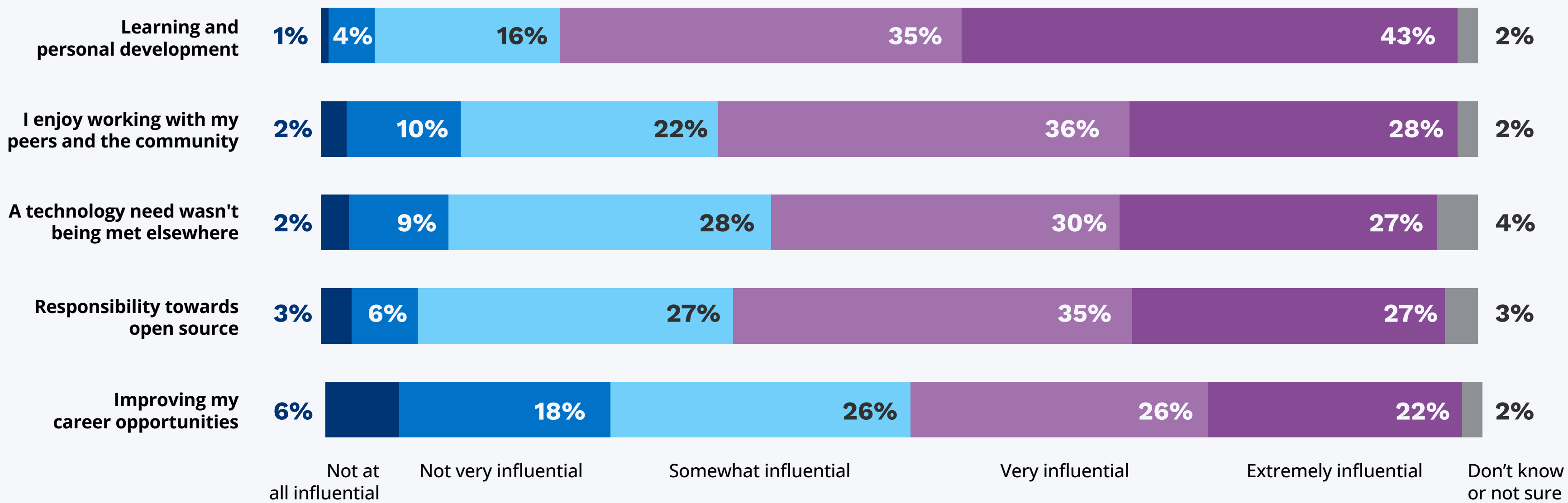


FIGURE 18

Motivations for contributing to open source in the respondent's personal time.

Source: World of Open Source Europe Spotlight Survey, Q34.



Open source leadership

Many factors that were highlighted across both our open consumption and contribution lines of research point to a general need for clear, strong leadership. The necessary drive and support to truly realise the potential value that an organisation can gain from open source often warrants dedicated focus and expertise. This can manifest in different forms: from a formal OSPO to simply having a single clear and visible leader for an open source strategy.

Our survey suggests that micro- (<10 employees) and enterprise (>10,000 employees) organisations are significantly more likely to have clear leadership on open source matters, as 38% and 47% of respondents in those respective segments indicated identifiable open source leadership compared to 24% in other organisation sizes (**FIGURE 19**).

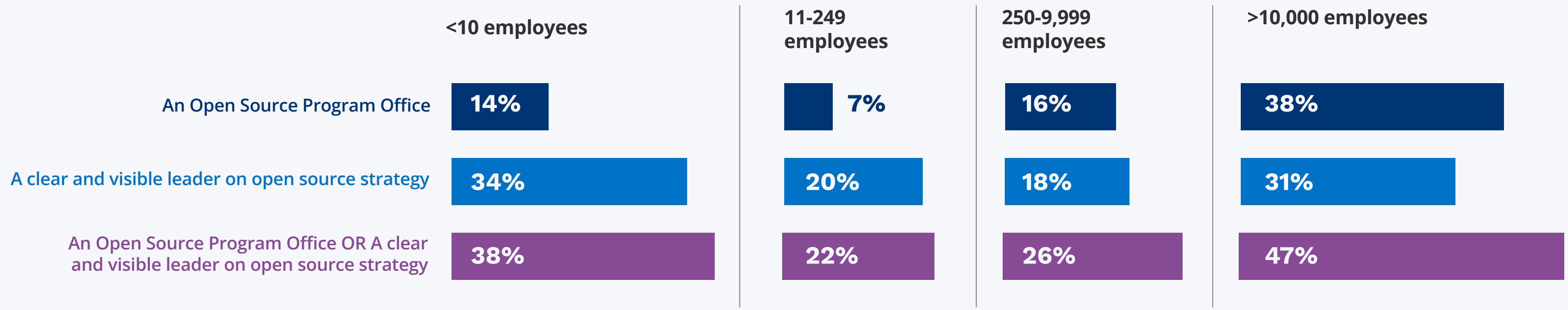
"A central role of the OSPO is to relate the value to the business as a whole—not just in a way the CTO can understand—but the CFO and the rest of the C-suite too." — **ALOIS REITBAUER, HEAD OF OPEN SOURCE, DYNATRAC**

Unsurprisingly, in micro-organisations, this more commonly manifested as a single leader, whereas enterprise organisations showed a mixture of one or both of an OSPO and a clear leader. Additionally, we saw differences between sectors, with 39% of information technology

FIGURE 19

The presence of an OSPO and/or a clear and visible leader for an open source strategy at the respondent's organisation relative to the organisational size.

Source: World of Open Source Europe Spotlight Survey, Q12 by Q9 (Company size classes—aggregated).



"There is a general lack of consumption maturity in Italy. Specifically, dev/code level understanding of consumption is decent, but higher level management of consumption—that is, aspects typically covered by OSPO ideas and methodologies—is not...This might be because code and runtime are the common language and regulation at the dev/code level, where language and regulation are not common at the higher level, meaning expertise does not flow as readily."

—STEFANO PAMPALONI

organisations indicating identifiable open source leadership versus 21% of non-information-technology organisations.

A full 45% of our respondents indicated their agreement with the sentiment that their organisation would increase open source consumption if it focused investment or effort on an OSPO or a clear and visible leader for open source strategy.

The potential impact of identifiable open source leadership is visible in our data, although whether this leadership is causal or simply correlated with these findings is unknown.

- **Improved clarity on open source policy and intent** (FIGURE 20): Only 6% indicated that their organisation did not have a clear policy on open source consumption (versus 22% of organisations without identifiable open source leadership), and 74% indicated that the policy openly encouraged open source consumption (versus 49% of organisations without identifiable open source leadership).

FIGURE 20

Presence and permissiveness of a consumption policy at the respondent's organisation relative to the presence or absence of an OSPO and/or a clear and visible leader for an open source strategy.

Source: World of Open Source Europe Spotlight Survey, Q13 by Q12 (for OSPO strategy versus no strategy).

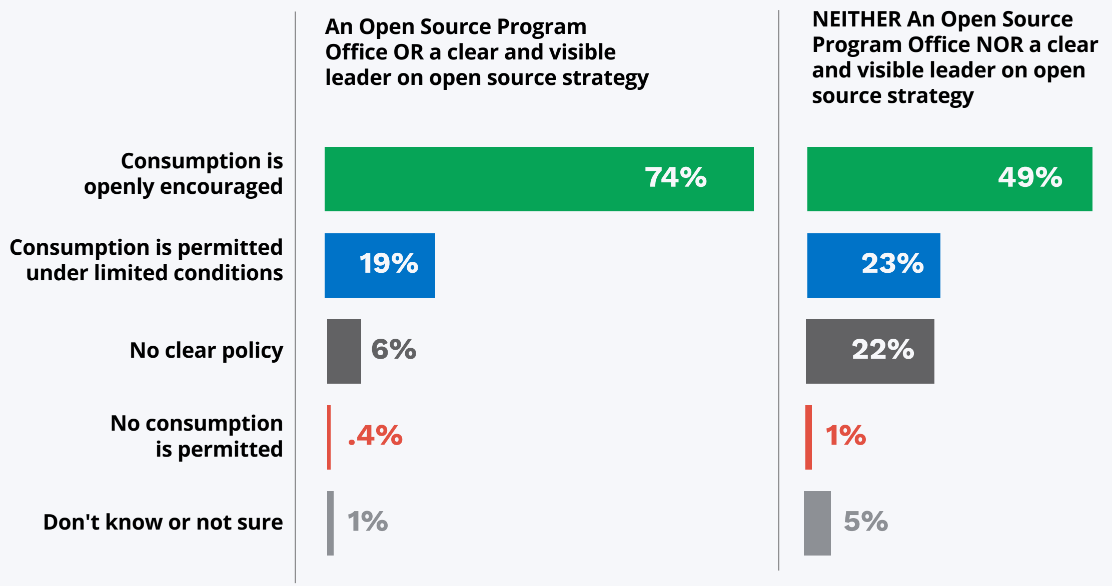
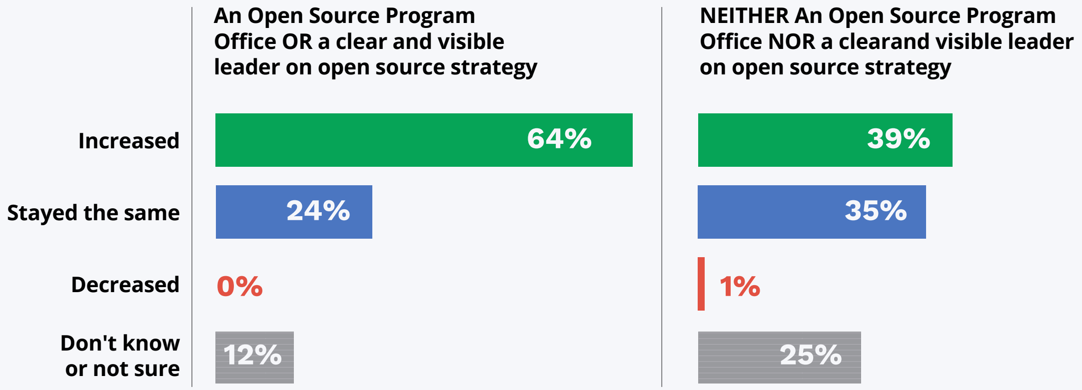


FIGURE 21

Perceived change in the value derived from open source at the respondent's organisation relative to the presence or absence of an OSPO and/or a clear and visible leader for an open source strategy.

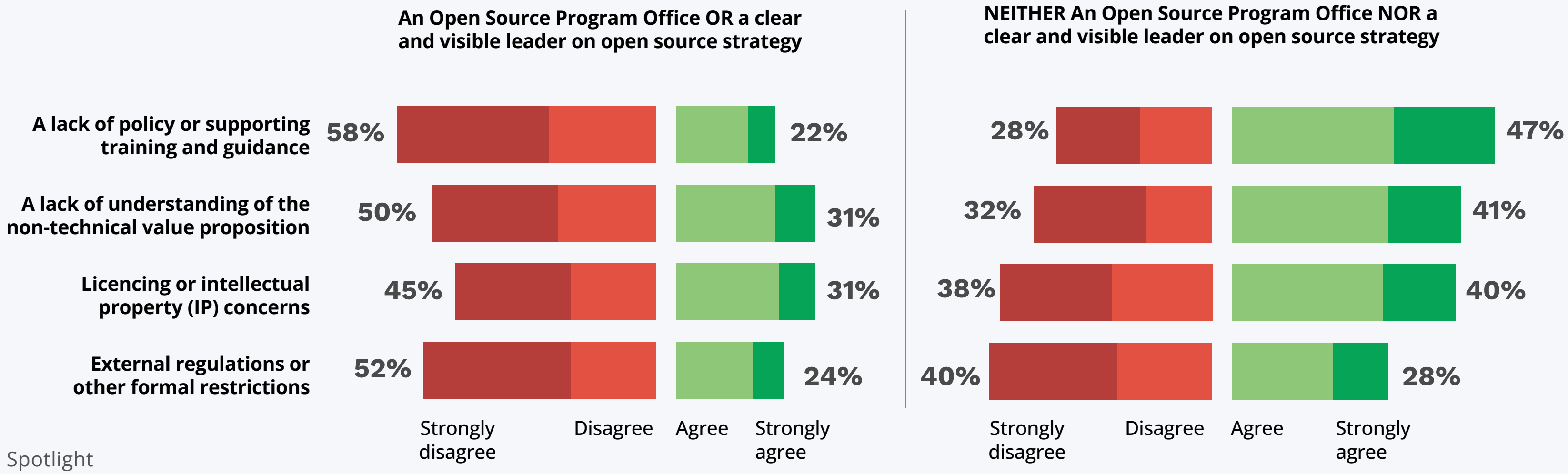
Source: World of Open Source Europe Spotlight Survey, Q16 by Q12 (for OSPO strategy versus not).



- **Increased perception of value derived from open source** (FIGURE 21): 64% indicated that the value that their organisation has derived from open source consumption over the last year has increased compared to 39% of organisations without identifiable open source leadership.
- **Reduced perception of internal blockers** (FIGURE 22): Only 22% agreed that a lack of policy or supporting training and guidance limited their organisation's consumption of open source (versus 47% of organisations without identifiable open source leadership), and 50% did not see a lack of understanding of the non-technical value proposition of open source as limiting (versus 32% of organisations without identifiable open source leadership).

FIGURE 22

Levels of agreement that factors are limiting the consumption of open source at the respondent's organisation, relative to the presence or absence of an OSPO and/or a clear and visible leader for an open source strategy.



Source: World of Open Source Europe Spotlight Survey, Q18 by Q12 (for OSPO strategy versus not).

A view across Europe

In this section, we look beyond the mechanics of consuming or contributing to open source to explore the greater opportunities that are present. Here we find the following:

- Europeans have a 'romantic' relationship with open source in contrast to the commercial relationship that we tend to observe within North America.
- We observed some significant regional differences, with those in Spain as a notable outlier, as they had the least perceived value in open source and the least permissive consumption and contribution policies.
- Those that work in the finance and insurance sectors were the least bullish on the value of open source, with 63% strongly agreeing that it is important to the sector compared to a 74% average.
- The creation of industry standards and interoperability were the most widely cited benefits of open source. A notable exception was observed from the public sector, where transparency was the top benefit.
- Government consumption of open source and open source alternatives to technology monopolies were the areas that respondents felt warranted the greatest investment.
- The information technology, education, and public sectors stand to benefit the most from open source.

> *"The motivation for creation and contribution in Europe is distinctly more 'romantic' than in North America—projects are developed more for social reasons than for commercial ends. Initially, [MySQL] was a very "romantic" company...It was not about raising money...it was about how can we democratise databases and save this world from the dominance of [proprietary solutions]."*
>
> —PETER ZAITSEV, CEO, PERCONA

> *"Within large corporations, the business value of working in the open is better understood in North America than in Europe."*
>
> —DANIEL IZQUIERDO, CEO, BITERGIA

Europe's relationship with open source

While we did not explore the relationship that Europeans have with open source in detail, several individuals we interviewed expressed one recurring sentiment.

An emergent theme was that Europeans have a 'romantic' relationship with open source, while those in North America have a more commercial relationship. The romantic relationship can be interpreted in a great variety of ways, for example, valuing the community-building aspects of open source or its use as a common good. However, anecdotally, North American organisations have incorporated open source into their commercial strategy—to put it simply, they have created business models that are able to make money from open source.

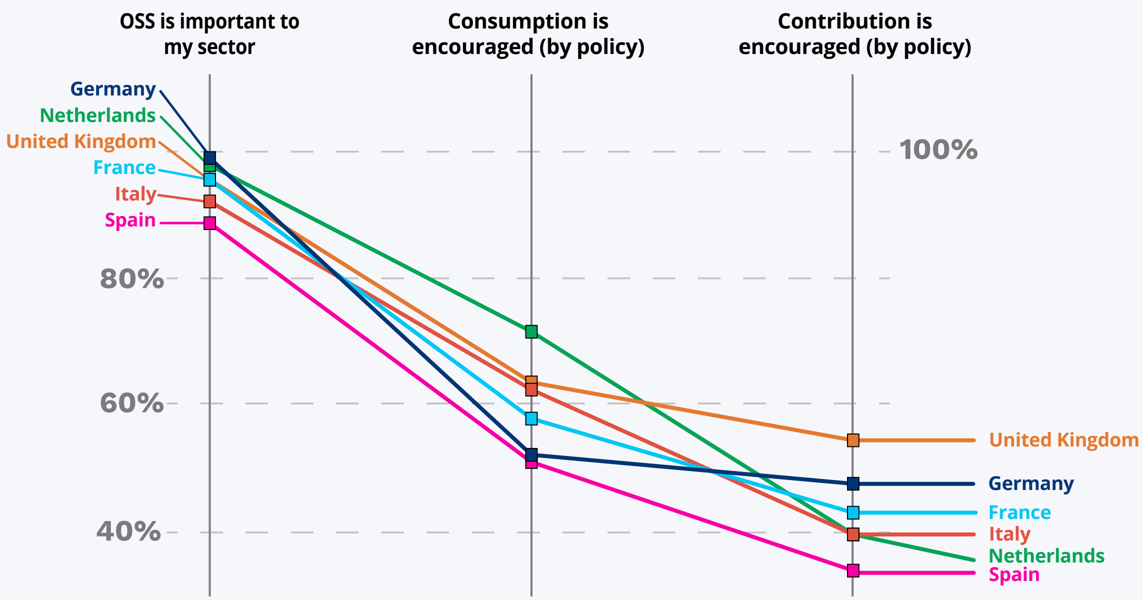
While our survey did not explicitly ask whether open source is a 'romantic' or 'commercial' concern, the responses provided some hints. When asked why organisations should contribute to open source, 'improving quality' was the strongest motivator, followed by 'to fulfil a moral obligation'. Notably, a similar question in the 2021 Fintech Open Source Foundation (FINOS) State of Open Source in Finance Survey told a different story, with a 'moral obligation' cited as the weakest motivator. Elsewhere in our survey, we found that personal contributions were more motivated by learning and fun rather than by a desire to further an individual's career.

It should be noted that neither the romantic or commercial relationship with open source is right or wrong and that they are by no means exclusive.

FIGURE 23

The perceived importance of open source and how it flows into consumption and contribution in various European countries.

Source: World of Open Source Europe Spotlight Survey, Q35, Q13, Q20 by Q2 (for Leading European Countries).



From a macro perspective, the commercialisation of open source has seen great success in the last decade. Nauta Capital, a UK-based venture capital (VC) fund, noted in a recent report that 'Open Source is Eating Europe'[17] and shared their thoughts on the deep commercial value of open source. It summarised that the open-source movement matured and reached a commercialisation tipping point around 2018.

Variations between European countries

When asked how valuable open source is to the future of their sector, there was a modest variation between countries, with the extremes being the following: Germany, where 94% agreed that it was valuable to the future of their sector, and Spain, where this was lower at 85%. These results could be interpreted as a broad indication of the general value that each country perceives in open source software.

With this in mind, we looked at the consumption and contribution policies of each European country and identified the percentage of respondents that reported the most permissive policies (i.e. open encouragement). Here, we observed a strong relationship between the perceived value of open source, the level of consumption, and the level of contribution (**FIGURE 23**). Spain is an outlier, with comparatively fewer respondents reporting permissive consumption and contribution policies.

It is interesting to see how the differing contribution policies compare to the publicly visible open source activity (via GitHub) emanating from each European country. Using data from a recent research article, which analysed GitHub commits to determine their country of origin,[18] we found a notable correlation between the two—countries where survey respondents report more permissive contribution policies demonstrate a greater level of activity on GitHub (**FIGURE 24**).

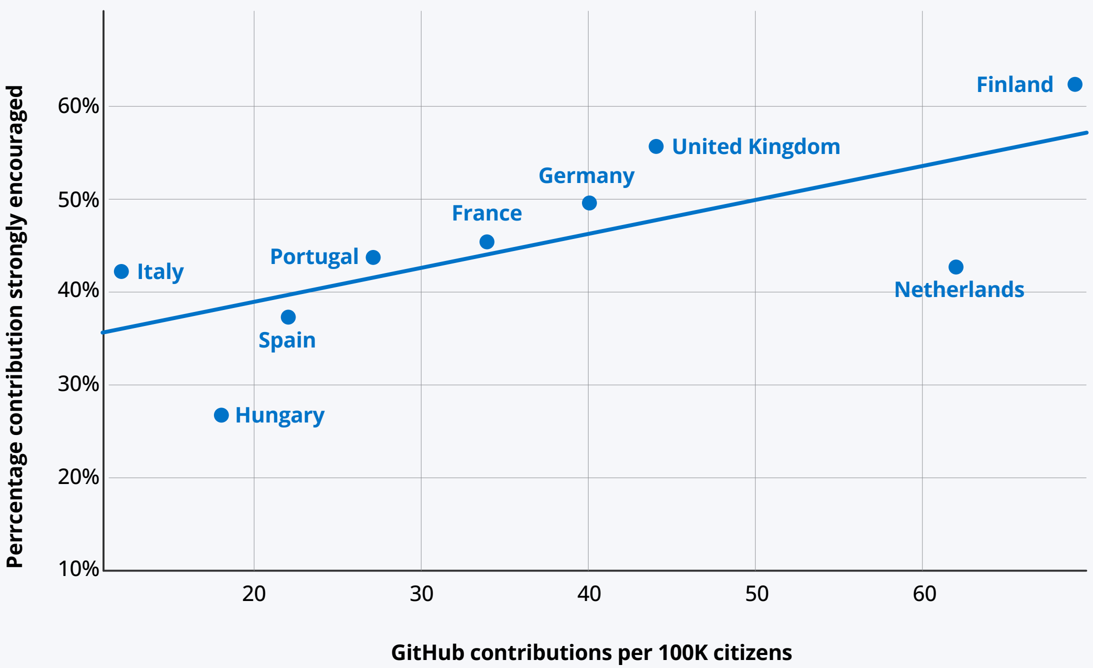
While the correlation is clear, it is unlikely that a change in employer contribution policies alone will result in these differences being normalised. The relative level of contributions that we see from each European country is a product of many factors, including culture, *"In the last 10 years, we've seen incredible growth in foundations (e.g. The Linux Foundation), and important acquisitions (Red Hat/IBM, GitHub/ Microsoft). This is an evolution in OSS."*

—MARCO BERLINGUER, RESEARCHER AT THE INSTITUTE FOR GOVERNMENT AND PUBLIC POLICY (IGOP)

FIGURE 24

The relationship between permissive contribution policies and the observed contributions to GitHub for various European countries.

Source: World of Open Source Europe Spotlight Survey (Q20) and The Geography of Open Source Software



economy, and policies, many of which have not been explored. Of note is the report on *the impact of open source software and hardware on technological independence, competitiveness, and innovation in the EU economy,*[19] which was authored by the European Commission. This report undertook a detailed analysis of the government policies relating to open source within both the public and private sectors. Significant differences were highlighted between countries (**FIGURE 25**); however, there is no clear correlation between their findings and our survey results.

Taking a sector perspective

Earlier, we reported that 89% of respondents agreed or strongly agreed that open source is valuable to the future of their sector, with 74% strongly agreeing. Breaking this down by the sector that the respondents work within shows several notable differences. Those that work within finance and insurance were the least bullish on the value of open source, with 61% strongly agreeing that it is important to the sector (**FIGURE 26**).

We can gain further insight by looking at the perceived benefits of open source reported by respondents based on their industry sector. When asked to identify the aspect of the respondent's sector that would most benefit from open source, the most widely cited benefit (50%) was the creation of industry standards and interoperability; this was the top benefit reported by most sectors. A notable exception was observed in the public sector, where transparency was the top benefit (**FIGURE 27**).

While open source drives innovation, there are many ways in which this may manifest. Our interviews revealed a host of different examples, with the overriding sentiment being that innovation without open source is something of an oxymoron.

We explored how Europe should generally invest in open source by asking which areas there should be further investment in. Government consumption of open source (65%) and open source alternatives to technology monopolies (49%) were the areas that respondents felt warranted the greatest investment (**FIGURE 28**). There were some differences observed between sectors; those

FIGURE 25

The maturity of the open source policies within the public and private sector across a number of countries.

Criterion	Max Mark	Bulgaria	France	Germany	Italy	Poland	Spain	United Kingdom	United States	Brazil	China	India	Japan	South Korea
Dimension: Public sector		52%	65%	0%	63%	2%	57%	51%	54%	14%	40%	40%	0%	31%
Policy existence	15	15	5	0	10	0	15	10	10	0	5	10	0	10
Public procurement	15	15	10	0	15	0	5	5	10	0	10	10	0	0
Policy Implementation	15	3	8	0	4	0	5	6	6	0	5	5	0	0
OS competance	20	1	19	0	12	1	12	12	9	9	6	1	0	10
Dimension: Private sector		2%	29%	16%	13%	2%	20%	11%	0%	4%	56%	27%	7%	76%
Supporting private sector	20	0	0	2	0	1	0	0	0	0	14	5	1	17
Guidance	5	0	0	2	0	0	2	0	0	0	2	2	2	5
Community	10	1	10	1	4	0	6	3	0	1	4	4	0	6
OS present in neighbouring policies	10	0	3	2	2	0	1	2	0	1	5	1	0	6
Total of achievable mark		27%	47%	8%	38%	2%	38%	31%	27%	9%	48%	33%	3%	53%
Criterion	Max Mark	Bulgaria	France	Germany	Italy	Poland	Spain	United Kingdom	United States	Brazil	China	India	Japan	South Korea

Source: European Commission, Directorate-General for Communications Networks, Content and Technology, Blind, K., Pätsch, S., Muto, S., et al., The impact of open source software and hardware on technological independence, competitiveness and innovation in the EU economy: final study report, Publications Office, 2021, https://data.europa.eu/doi/10.2759/430161

"Open source allows you to accelerate innovation; you can validate/ test new ideas readily (rapid feedback). This process can accelerate contribution, adoption, and agreement."

—ALOIS REITBAUER, CHIEF PRODUCT OFFICER AND HEAD OF OPEN SOURCE, DYNATRACE

FIGURE 26

The extent to which survey respondents feel that open source is valuable to their sector.

Source: World of Open Source Europe Spotlight Survey, Q8 by Q35 (for strongly agree).

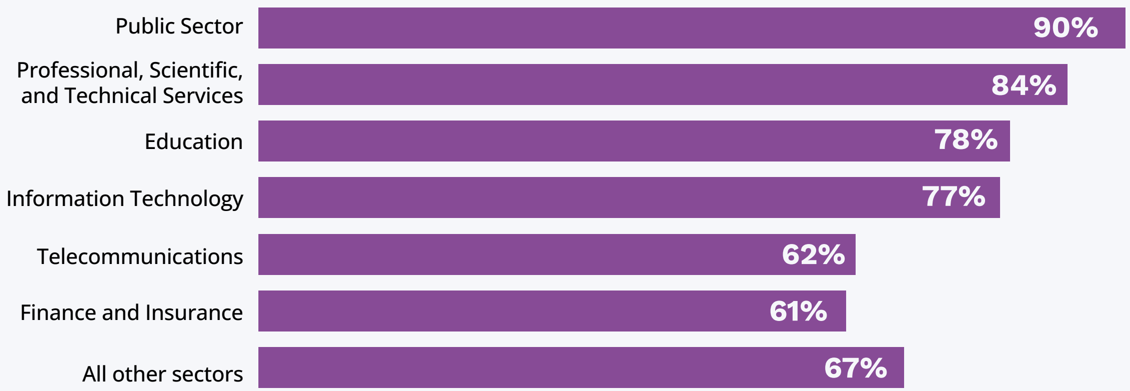


FIGURE 27

The cited benefits of open source by industry sector.

Source: World of Open Source Europe Spotlight Survey, Q37 by Q8 (for leading industries).

Deviation from mean						
+30%	+20%	+10%	0%	-10%	-20%	-30%

	Professional, Scientific, and Technical Services	Public Sector	Information Technology	Education	Telecommunications	Finance and Insurance
Industry standards and interoperability	54%	34%	51%	46%	57%	61%
Innovation	34%	38%	43%	43%	52%	39%
Improving productivity	32%	41%	35%	19%	31%	31%
Reducing product development costs	34%	17%	32%	16%	38%	39%
Collaboration	38%	24%	31%	46%	21%	22%
Transparency	36%	52%	32%	32%	19%	18%
Reducing operating costs	27%	38%	24%	41%	31%	29%
Sharing of data	13%	24%	10%	38%	7%	4%
Regulation and legal compliance	11%	14%	11%	5%	5%	22%
Risk management	11%	10%	6%	8%	2%	8%

"The pace of business today means there is no space for innovation outside OSS. More tech conferences (e.g. KubeCon) staged competing companies collaborating on OSS to build foundations, elaborating commercial strategy on top of; more importantly, we can now observe end-user companies entering the game of contributing on complementary layers of the tech stack. This is clearly a sign of maturity to my eyes."

—PHILIPPE ENSARGUET, CTO, ORANGE BUSINESS SERVICES

"According to the principle of 'public money, public code,' open source should be enforced as the primary choice wherever functionality is on par." —FREDERIK BLACHETTA, CHIEF STRATEGY OFFICER, DATAPORT

FIGURE 28

The areas which respondents feel should receive further open source investment within Europe by industry sector.

Source: World of Open Source Europe Spotlight Survey, Q39 by Q8 (for leading industries).

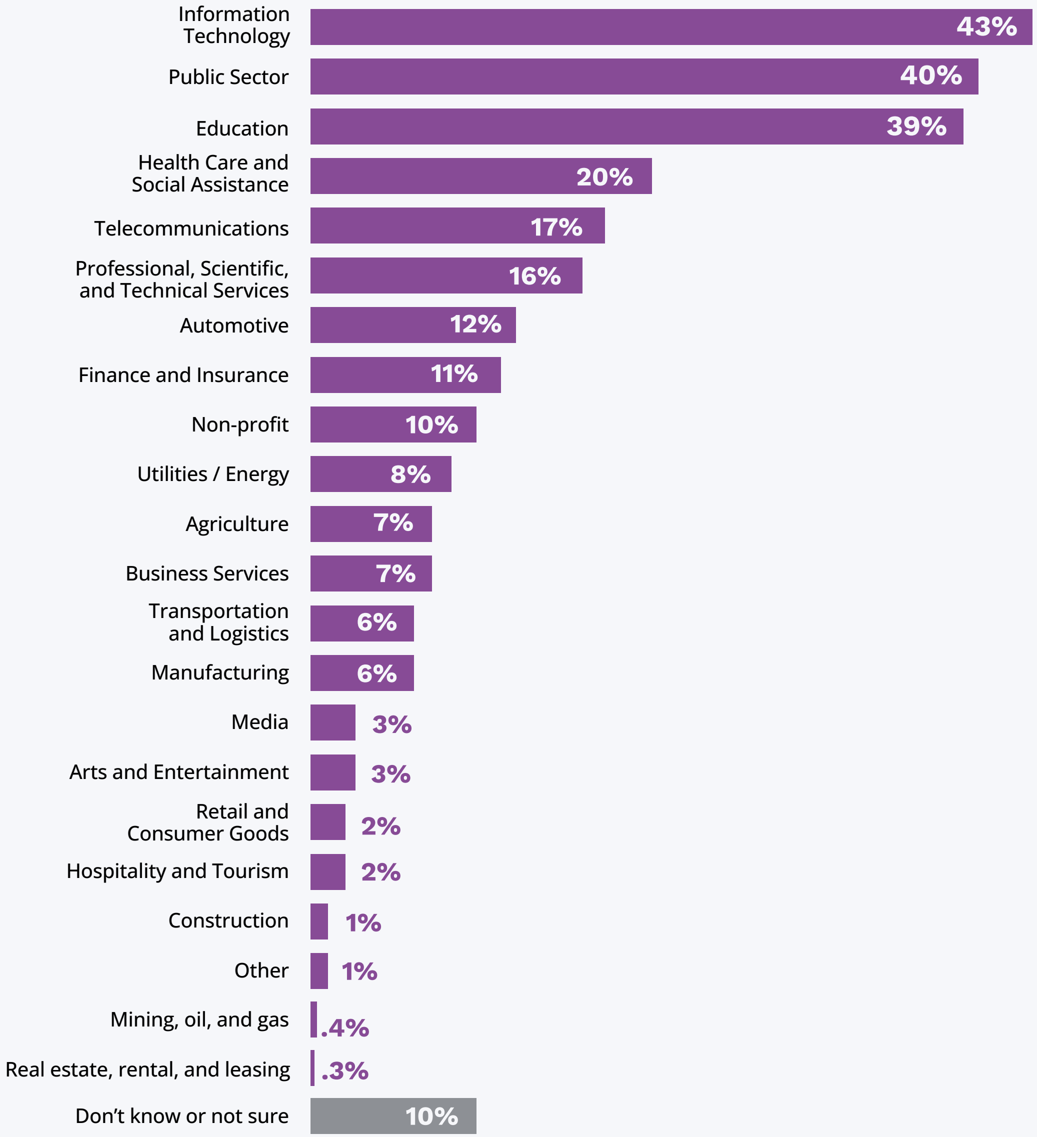
Deviation from mean						
+30%	+20%	+10%	0%	-10%	-20%	-30%

	Professional, Scientific, and Technical Services	Public Sector	Information Technology	Education	Telecommunications	Finance and Insurance
Government consumption of open source	61%	93%	66%	70%	57%	51%
Open source alternatives to technology monopolies	39%	45%	54%	57%	40%	39%
Better academic education	25%	48%	30%	57%	26%	20%
Open source as "digital commons"/public good	32%	41%	24%	38%	29%	27%
Individual incentives (e.g., grants) to maintainers	21%	10%	27%	19%	19%	35%
Better funding of the commercial open source startup ecosystem	34%	0%	24%	16%	12%	22%
Foster open source global technology standards	32%	14%	19%	14%	19%	18%
Mentorship/internship programmes	18%	3%	15%	8%	19%	16%
A friendlier legal landscape for open source	18%	10%	13%	11%	14%	14%
Additional laws like the Digital Services Act and Digital Markets Act	4%	14%	3%	0%	7%	4%

FIGURE 29

The sectors that the respondents feel would most benefit from investing in open source.

Source: World of Open Source Europe Spotlight Survey, Q38



within financial and insurance expressed a preference for incentives or grants for maintainers, which could be due to the challenges that the industry faces in making their own contributions. Unsurprisingly, those within the public sector almost unanimously indicated that there should be more government consumption of open source. This was also the sector that expressed the strongest sentiment towards open source being a 'public good.'

We asked the survey respondents which sectors they felt would benefit the most from investing in open source, with the information technology, public, and education sectors being the clear leaders (**FIGURE 29**). This reflects the notion that these sectors are arguably the most universally used, i.e. they represent the areas for the most potential collective value.

Several of our interviewees expressed strong opinions about the usage of open source within the public sector.

"Open source is good for innovation, people creating things that they are passionate about, rather than being driven through commercial incentives."

—LUKE PAGE, SOLUTIONS ARCHITECT, SAXO BANK

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Conclusion

When embarking on a research project, you are taking a journey into the unknown. While you can be guided by previous research and your instincts, it is impossible to know what your research may uncover and where your journey might end. With this work, our journey was fruitful, and we made many discoveries along the way. Hopefully, in reading this report, you will have also enjoyed the journey.

However, we want this report to be more than just a story. There are clear opportunities in front of us and tangible problems to be solved. Here are some actions that you can take to make open source more accessible, sustainable and valuable for yourself, your organisation, Europe, and the global community:

Address the imbalance between consumption and contribution through a clear policy.

The open source sustainability challenge is being increasingly recognised across the industry. Our research was able to shine a light on the imbalance between consumption and contribution, with policy being at the heart of the matter. The gap was wider in some sectors (telecommunications, public sector, finance, and insurance) and should be addressed with greater urgency.

Create clarity through leadership.

We found that where clear leadership exists (either through an OSPO or an individual), people feel more empowered. This is a natural build on the previous point, with leadership and a clear policy going hand-in-hand.

Encourage public sector investment in open source.

Despite the publicly visible policies on consumption and the increasing number of public sector-founded projects, we found this sector to be an outlier across many aspects of our research. As citizens, we all have a vested interest in how public sector organisations spend our money. The public sector is very much in need of open source leadership.

Embrace open source as a mechanism for apolitical collaboration and shared value creation.

The nature of open source technology and ways of working means that it breaks down boundaries. Since the value that it creates is by design for all, it is an inherently neutral and safe space for collaboration. Use these characteristics to your benefit to foster non-commercial engagement and working relationships between experts, regardless of where they are based.

Demographics

After the initial screening, our survey generated 1,195 responses. The focus of our report was on the policies of the organisation where the respondents worked. For this reason, we questioned their level of familiarity with their organisation's approach to open source. Only a small number (12%) reported a lack of familiarity, and these responses were removed from any question relating to their current organisation, which resulted in a final dataset of 1,050 responses.

The survey yielded responses from 42 different European countries, and we had sufficient responses (n>=60) from several countries (Germany, France, Italy, United Kingdom, Spain, Netherlands) to support an analysis of the differences between countries.

We asked about the role with which they most closely identified and found that a prevailing number (50%) were developers or software engineers (**FIGURE 30**).

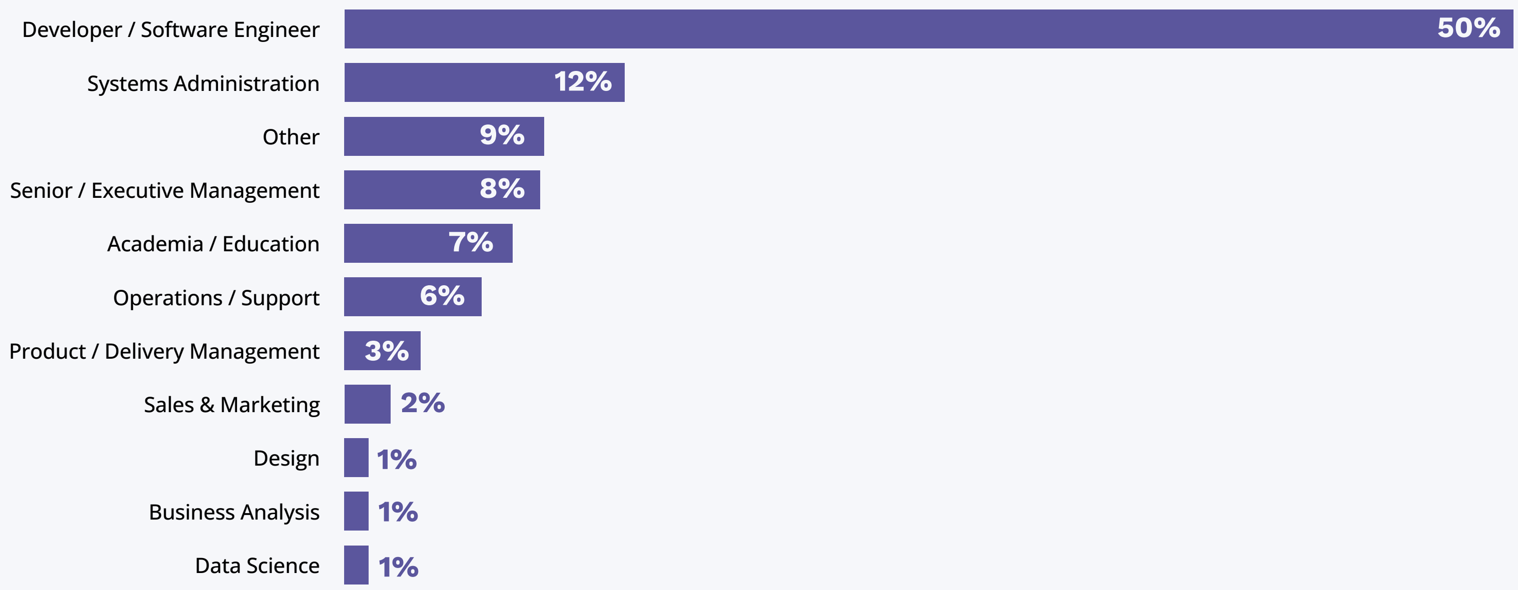
When viewing the data by industry sector, our results were heavily skewed towards information technology (40%); however, we had sufficient data to support sector differences between a subset of reported sectors (professional, scientific and technical services; public sector; information technology; education; telecommunications; finance; and insurance).

Our responses spanned a range of organisation sizes, which allowed us to investigate how they influence various aspects of open source.

FIGURE 30

The professional role with which the respondent most closely identified.

Source: World of Open Source Europe Spotlight Survey, Q6.



Methodology

This report provides comprehensive findings of the perspectives of European open source professionals. It is based on data collected from the inaugural World of Open Source Europe Spotlight 2022 Survey and a series of qualitative interviews with 16 subject matter experts from different sectors and countries across Europe.

The survey for this research was developed in partnership with Linux Foundation Research and Scott Logic in April 2022 and fielded as a web survey in May 2022 by the Linux Foundation and project partners, including FINOS, LF Training & Certification, LF Public Health, and TODO Group Europe Chapter, as well as several organisations across the non-profit, for-profit, and academic sectors, including Codemotion, Esade, Friedrich Alexander University, Institut de Govern i Polítiques Públiques (IGOP) de la Universitat Autònoma de Barcelona, OpenForum Europe, Sailboard, Scott Logic, TU/Berlin, TU/Eindhoven, Università di Roma Tre, and the University of Southampton.

The respondents were individuals who identified as open source professionals (someone who uses or contributes to open source technologies), were residents of Europe, and were employed on a full- or part-time basis. The survey included screening questions, demographic questions about individuals and the organisations that they work for, and questions specific to open source consumption, contribution, creation, and opportunities.

A total of 1,050 respondents qualified for the survey based on being a real person, at least part-time employed, and a resident of Europe. Exactly 779 respondents completed the consumption section, and 682 completed the survey through to the last question.

The percentage values in some figures may not add exactly to 100% due to rounding.

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About the authors

Colin Eberhardt

Colin is the CTO at Scott Logic, which is a lively and fast-growing UK-based software consultancy that delivers bespoke software consultancy services to some of the world's largest enterprises. He is an active member of FINOS, which is an organisation that fosters open source collaboration within financial services, has previously served on the board, and is currently chairing the Technical Steering Committee. Colin is a passionate technologist, author, blogger, and speaker on a wide range of topics, an advocate of open source software and its sustainability, and a highly active contributor.

Graham Odds

Graham is the chief strategy officer at Scott Logic. His career has spanned development, UX design, and innovation, with a focus on expert user systems across a wide variety of industries. Through blogging, speaking, and facilitating, Graham shares his delight in pushing the boundaries of what is possible to discover beautiful, effective solutions to problems.

Matt Dunderdale

Matt is a delivery principal at Scott Logic, where he helps to ensure that high-performing teams have what they need to meet and exceed client expectations for bespoke software solutions and consulting expertise. Matt's experience spans the full solution delivery lifecycle, and he understands the significance of using open source foundation components through over 20 years of application service introduction. Matt's recent focus has been on the financial services sector; prior to this, he spent over five years engaged with the development and delivery of research projects for public sector clients.

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