



**Intellectual Property, Jobs  
& Prosperity in the Nordic  
Region**

**2024 Index**

**Dr. Nima Sanandaji**

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## Table of contents

Förord: Oro för det immaterialrättsliga skyddet .....	4
Nyckelbudskap .....	6
Sammanfattning (Swedish) .....	8
Foreword: Concerns for the protection of intellectual property .....	16
Summary .....	20
Intellectual property rights and economic progress .....	30
The evolving challenge of intellectual property rights infringements .....	37
Schools, municipalities, and public agencies can strengthen intellectual property rights .....	43
Methodology for calculations .....	46
Crowding out due to counterfeiting and piracy .....	60
Sweden, regional data .....	65
Denmar, regional data .....	67
Finland, regional data .....	69
Norway, regional data .....	71
Sources .....	74

# Förord: Oro för det immaterialrättsliga skyddet

De nordiska länderna är kända för sin innovation och kreativitet. För att fortsätta ligga i framkant, stärka konkurrenskraften och främja den ekonomiska tillväxten är skyddet av immateriella rättigheter av yttersta vikt.

Immaterialrätten står just nu för nya och komplexa utmaningar i och med framväxten av generativ AI. Utvecklingen av AI erbjuder stora möjligheter, även för kreatörer av olika slag. Att främja öppenhet och tillgänglighet till information och kunskap måste dock balanseras mot behovet av att skydda immateriella rättigheter. Denna spänning mellan skydd och tillgänglighet är en central utmaning för lagstiftaren. De nordiska länderna ser för närvarande ut att välja delvis olika angreppssätt, mer och mindre proaktivt.

Det finns en oro bland rättighetshavare att ensamrätten kommer att offras i jakten på ett framåtsträvande AI-klimat. Oron är befogad. Den data som används för att träna AI-programmen består till stor del av upphovsrättsskyddade verk, där rättighetshavarna varken tillfrågats om eller får ersättning för nyttjandet. Kommer detta tekniksprång misslyckas med att skydda rättighetshavarna från intrång? Det skulle få allvarliga och långsiktiga konsekvenser för innovation och skapande.

Vid sidan av AI-utvecklingen ser vi fortsatt att organiserad ekonomisk brottslighet ökar. Siffror i denna rapport talar sitt tydliga språk, 77 600 arbetstillfällen förloras på grund av immaterialrättsintrång. Dessa siffror skriker att något behöver göras.

Med denna rapport vill vi därför uppmärksamma behovet av en modernare immaterialrätt. Genom att kombinera skyddet för ensamrätterna med den nya teknikutvecklingen kan Sverige nå en ny guldålder, Missar vi den chansen riskerar vi istället att få en utarmad immaterialrättssektor som parasiterats av teknikjättarna.

Nätverket för en modern immaterialrätt anser att följande måste på plats:

- En nationell immaterialrättsstrategi
- Informationsinsatser till allmänheten
- Möjligheten att agera mot intrång i live-evenemang
- Enklare blockeringsförfaranden mot illegala tjänster
- Tydliggörande av mellanhändernas ansvar

För att bekämpa intrången krävs en samarbetsinsats mellan rättighetshavare, myndigheter och konsumenter. Genom att öka medvetenheten om problemet och vidta åtgärder för att skydda immateriell egendom kan vi skydda både rättighetshavares intressen och den kreativa ekonomin som helhet.



Fotografi av: Anders Nilsson

**Sara Lindbäck**

**Nätverket för en modern immaterialrätt**

# Nyckelbudskap

Nordiska företag med intensivt beroende av immateriella rättigheter bidrar med 332 miljarder euro i värdeskapande (bidrag till BNP), och med över 3 miljoner jobb.

- Piratkopiering och immaterialrättsintrång i Norden beräknas leda till utträngning av 187 000 jobb, 20,3 miljarder euro i värdeskapande samt 5,3 miljarder euro i skatteintäkter. Dessutom blir en indirekt effekt att företagande och innovationer hämmas.
- Piratkopiering och immaterialrättsintrång beräknas tränga ut uppskattningsvis 77 600 jobb i Sverige. Det beräknas även tränga ut värdeskapande som uppgår till 7,6 miljarder euro. Utträngningen av skatteintäkter i Sverige uppgår till 2,0 miljarder euro.
- Motsvarande siffror för övriga Norden innebär att piratkopiering och immaterialrättsintrång beräknas tränga ut värdeskapande som uppgår till 6,2 miljarder i Danmark, 3,7 miljarder i Norge och 2,8 miljarder i Finland. Antalet jobb som trängs ut uppgår till uppskattningsvis 45 700 i Danmark, 31 500 i Norge och 32 500 i Finland. Utträngningen av skatteintäkter uppgår till 1,6 miljarder i Danmark, 970 miljoner i Norge och 730 miljoner i Finland euro.
- Värdeskapandet per anställd är 46 procent högre i nordiska företag med intensivt beroende av immateriella rättigheter, jämfört med resten av näringslivet (exklusive finansbranschen).

- Kriminella aktörer berikas av immaterialrättsintrång, till exempel genom prenumerationsavgifter för illegala IPTV-tjänster, vilka 5-600 000 svenska hushåll betalar för. Medan kriminella organisationer berikas pressas intäkterna för lagliga företag.
- Det behövs politiska reformer för att förbättra situationen. Sverige behöver bland annat en nationell immaterialrättsstrategi; informationsinsatser till allmänheten; möjlighet att agera mot intrång i live-evenemang; enklare blockeringsförfaranden mot illegala tjänster; tydliggörande av mellanhänders ansvar; att AI-utvecklingen sker med respekt för immaterialrättsfrågor.

## Sammanfattning (Swedish)

Varumärken, patent, upphovsrätt och designrättigheter spelar en avgörande roll för nordiska företag. De allra flesta företag är beroende av immaterialrätt i någon form, till exempel i form av skydd för företagets varumärke. En del företag är intensivt beroende av immateriella rättigheter, det vill säga att de verkar i branscher där immateriella värden är en avgörande del av affärsverksamheten. Denna studie undersöker hur många jobb och vilket ekonomiskt värde dessa företag skapar i de olika nordiska länderna och regionerna inom dessa länder. Studien uppskattar också utträngningseffekten orsakat av piratkopiering och immaterialrättsintrång.

**Företag med intensivt beroende av immaterialrätt bidrar med 332 miljarder euro i värdeskapande i Norden och med över 3 miljoner arbetstillfällen**

En genomgång av samtliga branscher som har ett intensivt beroende av immaterialrätt visar att de totalt bidrar med strax över 3 miljoner jobb i Norden, varav cirka 1 270 000 i Sverige, 749 000 i Danmark, 533 000 i Finland och 516 000 i Norge (tabell 1). Totalt bidrar dessa företag med ett ekonomiskt värdeskapande på 332 miljarder euro i Norden, varav närmre 125 miljarder i Sverige, 101 miljarder i Danmark, 46 miljarder i Finland, och 61 miljarder i Norge (tabell 2).

Tabell 1. Antal anställda i branscher med intensivt beroende av immaterialrätt, 2023

	Sverige	Danmark	Finland	Norge	Hela Norden
<b>Informationsteknik</b>	224 800	102 600	101 600	85 000	514 000
<b>Kunskapsintensiv industri</b>	421 400	237 200	193 300	136 700	988 600
<b>Media</b>	79 200	45 700	30 800	34 100	189 800
<b>Mode</b>	7 400	5 600	7 600	5 200	25 700
<b>Varumärkesberoende handel</b>	363 800	257 900	137 600	181 600	941 000
<b>Kunskapsintensiva tjänster</b>	175 200	100 200	62 500	74 000	411 800
<b>Summa</b>	<b>1 271 700</b>	<b>749 200</b>	<b>533 400</b>	<b>516 600</b>	<b>3 070 900</b>

Källa: Eurostat, och egna beräkningar.

Tabell 2. Värdeskapande (miljoner euro) i branscher med intensivt beroende av immaterialrätt, 2023					
	Sverige	Danmark	Finland	Norge	Hela Norden
Informationsteknik	26 800	12 400	10 650	11 650	61 500
Kunskapsintensiv industri	44 650	33 100	17 200	15 100	110 100
Media	7 050	3 250	3 400	3 450	17 150
Mode	500	500	400	450	1 850
Varumärkesberoende handel	34 150	43 200	10 000	22 500	109 850
Kunskapsintensiva tjänster	11 500	8 550	4 100	7 550	31 700
<b>Summa</b>	<b>124 700</b>	<b>100 900</b>	<b>45 800</b>	<b>60 700</b>	<b>332 100</b>

Källa: Eurostat, och egna beräkningar.

### Piratkopiering och immaterialrättsintrång i Norden tränger undan 187 300 jobb, 20,3 miljarder euro i värdeskapande och 5,3 miljarder euro i skatteintäkter

I **Sverige** beräknas piratkopiering och immaterialrättsintrång leda till minskat värdeskapande på 7,6 miljarder euro årligen och utträngning av 77 600 jobb i näringar med intensivt beroende av immateriella rättigheter (tabell 3). Skatteintäkterna påverkas också, med 2,0 miljarder euro i skatteintäkter som går förlorade på grund av att legala tjänster och företag trängs ut genom piratkopiering och immaterialrättsintrång.

För **Danmark** beräknas piratkopiering och immaterialrättsintrång leda till minskat värdeskapande på 6,2 miljarder euro årligen och att 45 700 arbetstillfällen trängs ut från industrier som är intensivt beroende av immateriella rättigheter. Förlusten av skatteintäkter uppgår till cirka 1,6 miljarder euro årligen.

Värdeskapandet i **Finland** minskar med cirka 2,8 miljarder euro på grund av piratkopiering och immaterialrättsintrång. Dessutom trängs nära 33 000 jobb ut, medan skatteintäkterna som går förlorade motsvarar cirka 730 miljoner euro.

I **Norge** leder piratkopiering och immaterialrättsintrång till att 31 500 jobb och ett ekonomiskt värdeskapande på 3,7 miljarder euro trängs ut och till en skatteförlust på 970 miljoner euro.

För **hela Norden** leder piratkopiering och immaterialrättsintrång till att 187 000 arbetstillfällen trängs undan. Förlusten i form av uteblivet värdeskapande motsvarar 20,3 miljarder euro, medan det är cirka 5,3 miljarder euro i skatteintäkter som trängs bort.

**Tabell 3. Ekonomisk förlust av piratkopiering och immaterialrättsintrång, estimat för 2023 (miljoner Euro)**

	Sverige	Danmark	Finland	Norge	Hela Norden
<b>Utträngning antal jobb</b>	77 600	45 700	32 500	31 500	<b>187 300</b>
<b>Utträngning värdeskapande (miljoner euro)</b>	7 600	6 200	2 800	3 700	<b>20 300</b>
<b>Utträngning skatteintäkter (miljoner euro)</b>	2 000	1 620	730	970	<b>5 310</b>

Källa: Eurostat, SCB, OECD och PRV (2019), Hardy (2017), och egna beräkningar.

### Värdeskapandet per anställd är 46 procent högre i branscher med intensivt beroende av immaterialrätt än i övriga nordiska näringslivet (exklusive finansbranschen)

Branscher med intensivt beroende av immateriella rättigheter tenderar att ha högre produktion per anställd än andra delar av näringslivet. I genomsnitt för hela Norden skapar den genomsnittliga anställda i näringar med intensivt beroende av immaterialrätt 46 procent högre ekonomiskt värde än den genomsnittliga anställda i resten av näringslivet exklusive finansbranschen. En förändring mot en högre andel av ekonomin med ett intensivt immaterialrättsberoende skulle kunna öka BNP per capita i Norden.

### Kriminella aktörer berikas av immaterialrättsintrång, medan laglydiga företag kläms

Enligt Mediavision finns det 490 000 svenska hushåll med illegal IPTV, Skatteverket uppskattar att det rör sig om cirka 600 000 hushåll i Sverige. Intrång i immateriella rättigheter tränger inte bara ut lagliga tjänster och företag, utan berikar också kriminella aktörer, vilket bidrar till starkare kriminella nätverk och mindre säkerhet i samhället. Att förhindra intrång är en viktig del av det brottsförebyggande arbetet.

### Kommunala offentliga upphandlingar behöver sätta stopp för plagierat undervisningsmaterial

Utbildningsmaterial är viktigt för att främja kunskap i kommande generation. Det finns dock aktörer som producerar skolböcker med till stor del plagierat innehåll. Dessa aktörer kan pressa kostnaderna lägre än laglydiga företag och därmed vinna offentliga upphandlingar. I det långa loppet kan immaterialrättsintrång undergräva kvaliteten på skolmaterial och därmed minska framtida generationers allmänna kunskapsnivå. En nationell immaterialrättsstrategi behövs, där en del är att immaterialrättsperspektivet tas i beaktande vid offentliga upphandlingar.

### AI-utveckling måste respektera immateriell egendom

Artificiella intelligenslösningar, som ChatGPT, blir alltmer populära och kommer, under de närmsta åren, att spela en nyckelroll inom den globala ekonomin. Dessa program har tränats och samlat information genom att läsa ett mycket stort antal böcker och texter. Teknikföretagen som utvecklat dessa lösningar har dock inte betalat någonting till de rättighetsinnehavare som har producerat materialet i böckerna och texterna som använts. Det är inte hållbart om AI-utvecklingen bygger på att kränka immateriella rättigheter.

### Att minska piratkopiering av dataspel främjar grön tillväxt

Det finns många former av immateriella intrång i datorspel. Spel kan laddas upp och laddas ner olagligt, knäckta eller stulna nycklar till spel kan säljas, eller så kan hela servrar sättas upp för piratkopierade spel. Skapande och konsumtion av dataspel är exempel på ekonomisk verksamhet som skapar mycket begränsad

miljöpåverkan. Denna form av grön tillväxt och konsumtion bör uppmuntras och främjas, vilket är möjligt genom åtgärder mot piratkopiering.

### **Polis, tull och åklagare behöver mer kompetens och bättre verktyg**

Sverige har en lång tradition av möbeltillverkning men branschen har problem med aktörer som säljer plagierade möbler på nätet, framför allt från Kina. Typfallet är att ett företag designar och producerar en möbel och lanserar den på ett event eller online. Inom några dagar, eller veckor, dyker plagiat upp och säljs online. Majoriteten av de företag som drabbas av piratkopiering i möbelbranschen agerar av olika skäl inte mot piratkopiering, och majoriteten av de som gör det har inte någon positiv erfarenhet. Rättssystemets oförmåga att hjälpa till är ett stort problem i sig. Det behövs fler åklagare med expertis i immateriella rättighetsfrågor, liksom fler insatser från polisen och Tullverket.

### **Konsumentverket och kommunala näringslivskontor kan spela en nyckelroll för att sprida kunskap om immateriella rättigheter**

Digital Services Act, EU:s förordning om den inre marknaden för digitala tjänster, innebär att Konsumentverket har en roll för tillsyn och efterlevnadskontroll. En viktig del av myndighetens arbete kan vara informationskampanjer riktade mot konsumenterna, som informerar om varför och hur konsumenterna kan bidra till att minska piratkopiering och immaterialrättsintrång. Kommunala näringslivskontor har i uppdrag att stödja lokala företag med rådgivning. Denna rådgivande roll kan utökas så att varje kommunalt näringslivskontor har personal som är utbildad i att ge råd kring skydd av immateriella rättigheter. Dessutom genomför kommuner offentlig upphandling och kan i denna process inkludera villkor om att utesluta företag som bryter mot immateriella rättigheter. Detta är inte minst relevant vid upphandling av läromedel för skolor.

### **Informationskampanjer behövs i skolor**

Ett sätt att reducera och bekämpa brottsligheten är att genomföra informationskampanjer. Utbildningsinsatser mot piratkopiering bidrar till att öka medvetenheten om de problem som orsakas på grund av piratkopiering och vilka konsekvenser detta kan leda till. Tidigare hade svenska skolor anti-piracy

föreläsningar. Detta behöver återinföras för att främja en bredare förståelse för de problem som orsakas av immaterialrättsintrång.

### **Nationell immaterialrättsstrategi behövs**

Det behövs politiska reformer för att förbättra situationen. Sverige behöver en nationell immaterialrättsstrategi. Det är viktigt att en sådan strategi omfattar: informationsinsatser till allmänheten, stärkta möjligheter att agera mot intrång i live-evenemang, enklare blockeringsförfaranden mot illegala tjänster, tydliggörande av mellanhänders ansvar, samt att AI-utvecklingen sker med respekt för immaterialrättsfrågor. Ett helhetsgrepp behövs för att skapa reell förändring.



# Foreword: Concerns for the protection of intellectual property

The Nordic countries are known for their innovation and creativity. In order to remain at the forefront, strengthen competitiveness and promote economic growth, the protection of intellectual property rights is of the utmost importance.

Intellectual property law faces new and complex challenges with the rise of generative AI. The development of AI offers great opportunities, even for creators of various kinds. However, promoting openness and accessibility to information and knowledge must be balanced against the need to protect intellectual property rights. This tension between protection and accessibility is a central challenge for the legislator. The Nordic countries currently choose partially different approaches, more and less proactive.

There is concern among rights holders that exclusivity will be sacrificed in pursuit of a forward-looking AI climate. The concern is justified. The data used to train the AI programs largely consists of copyrighted works, where the rights holders have not given permission, nor are they compensated for the use. Will this leap in technology fail to protect rights holders from infringement? It would have severe and long-term consequences for innovation and creation.

Alongside the AI development, we continue to see that organized financial crime is increasing. Figures in this report speak for themselves; 77,600 jobs are lost due to intellectual property infringement. These numbers scream that something needs to be done.

With this report, we want to draw attention to the need for a more modern intellectual property law. The Nordics can reach a new golden age by combining

the protection of exclusive rights with the new technological development. If we miss that chance, we instead risk an impoverished intellectual property sector that the technology giants have parasitized.

The Network for a Modern Intellectual Property Law believes that the following must be in place:

- A national intellectual property rights strategy
- Information efforts to the public
- The ability to act against infringements in live events
- Easier blocking procedures against illegal services
- Clarification of the intermediaries' responsibilities

To combat the infringements, a coordinated effort between rights holders, authorities and consumers is required. By raising awareness of the problem and taking steps to protect intellectual property, we can protect both the interests of rights holders and the creative economy as a whole.



Photography by: Anders Nilsson

**Sara Lindbäck**

**The Network for a Modern Intellectual Property Law**

## Key messages

- Nordic companies with intense dependence on intellectual property rights contribute with 332 billion euros in value creation (contribution to GDP), and with above 3 million jobs in the Nordics.
- Counterfeiting and piracy in the Nordics are estimated to lead to crowding out of 187,000 jobs, 20.3 billion euros in value creation, as well as 5.3 billion euros in tax revenues. In addition, an indirect effect is that that entrepreneurship and innovations are inhibited.
- Counterfeiting and piracy are estimated to have crowded out value creation amounting to 7.6 billion euros in Sweden, 6.2 billion in Denmark, 3.7 billion in Norway, and 2.8 billion in Finland. The number of jobs crowded out by counterfeiting and piracy amounts to estimated 77,600 in Sweden, 45,700 in Denmark, 31,500 in Norway, and 32,500 in Finland. The crowding out of tax revenues amounts to 2.0 billion euros in Sweden due to counterfeiting and piracy, compared to 1.6 billion in Denmark, 970 million in Norway, and 730 million in Finland.
- Value creation per employee is 46 percent higher in Nordic businesses with intense dependence on intellectual property rights, compared with the rest of the business sector excluding finance.
- Criminal actors are enriched by infringement of intellectual property rights, for example through subscription fees for illegal IPTV services, which 5-600 000 Swedish households pay for. While criminal organizations are enriched, the revenues of legal businesses are squeezed.
- Political reforms are needed to improve the situation. Sweden needs: a national intellectual property rights strategy; information efforts to the public; ability to act against live event infringement; easier blocking procedures against illegal services; clarification of intermediaries' responsibilities; that AI development takes place with respect for intellectual property rights issues.

## Summary

Trademarks, patents, copyrights, and design rights play a decisive role for the companies in the Nordic region. Most companies have at least some forms of dependence on intellectual property rights, for example in the form of protection for the company's brand. Some companies are *intensely dependent* on intellectual property rights, since they are in industries where intellectual property is a crucial part of business operations. This study examines how many jobs and what economic value these companies create, in the various Nordic countries and the regions within these countries. The study also estimates the crowding out effect caused by counterfeiting and piracy.

### Companies with intense dependence on intellectual property rights contribute with 332 billion euros in value creation in the Nordics, and with above 3 million jobs

Those businesses that have an intense dependence on intellectual property rights contribute with just above 3 million jobs in the Nordics, of which approximately 1.27 million in Sweden, 749,000 in Denmark, 533,000 in Finland and 516,000 in Norway (table 1). In total, these companies create an economic value creation of 332 billion euros in the Nordics, of which close to 125 billion in Sweden, 101 billion in Denmark, 46 billion in Finland, and 61 billion in Norway (table 2).

**Table 1. Number of employees in industries with intense dependence on intellectual property rights, 2023**

	Sweden	Denmark	Finland	Norway	All Nordics
<b>Information technology</b>	224,800	102,600	101,600	85,000	514,000
<b>Knowledge intense industries</b>	421,400	237,200	193,300	136,700	988,600
<b>Media</b>	79,200	45,700	30,800	34,100	189,800
<b>Fashion</b>	7,400	5,600	7,600	5,200	25,700
<b>Trademark dependent trade</b>	363,800	257,900	137,600	181,600	941,000
<b>Knowledge intense services</b>	175,200	100,200	62,500	74,000	411,800
<b>Sum</b>	<b>1,271,700</b>	<b>749,200</b>	<b>533,400</b>	<b>516,600</b>	<b>3,070,900</b>

Source: Eurostat, and own calculations.

**Table 2. Value creation (millions of euros) in industries with intense dependence on intellectual property rights, 2023**

	Sweden	Denmark	Finland	Norway	All Nordics
<b>Information technology</b>	26,800	12,400	10,650	11,650	61,500
<b>Knowledge intense industries</b>	44,650	33,100	17,200	15,100	110,100
<b>Media</b>	7,050	3,250	3,400	3,450	17,150
<b>Fashion</b>	500	500	400	450	1,850
<b>Trademark dependent trade</b>	34,150	43,200	10,000	22,500	109,850
<b>Knowledge intense services</b>	11,500	8,550	4,100	7,550	31,700
<b>Sum</b>	<b>124,700</b>	<b>100,900</b>	<b>45,800</b>	<b>60,700</b>	<b>332,100</b>

Source: Eurostat, and own calculations.

**Counterfeiting and piracy in the Nordics crowds out 187,000 jobs, 20.3 billion euros in value creation, and 5.3 billion euros in tax revenue**

In **Sweden**, counterfeiting and piracy are estimated to lead to reduced value creation of 7.6 billion euros annually and the crowding out of 77,600 jobs in industries with intense dependence on intellectual property rights (table 3). Tax revenues are also affected, with 2.0 billion euros in tax revenue lost due to legal businesses and services being crowded out by counterfeiting and piracy.

For **Denmark**, counterfeiting and piracy are estimated to lead to reduced value creation of 6.2 billion euros annually and to the crowding out of 45,700 jobs from industries that are intensely dependent on intellectual property rights. The loss of tax revenue amounts to around 1.6 billion euros annually.

Value creation in **Finland** is reduced by approximately 2.8 billion euros due to counterfeiting and piracy. In addition, close to 32,500 jobs are crowded out, while the tax revenue that is lost corresponds to 730 million euros.

In **Norway**, counterfeiting and piracy lead to the crowding out of 31,500 jobs, an economic value creation loss of 3.7 billion euros, and to a tax loss of 970 million euros.

For the **entire Nordic region**, counterfeiting and piracy lead to the crowding out of 187,000 jobs. The loss in the form of value creation corresponds to 20.3 billion euros, while the tax loss amounts to approximately 5.3 billion Euros.

**Table 3. Economic loss due to counterfeiting and piracy (millions of Euros), estimates for 2023**

	Sverige	Denmark	Finland	Norway	All Nordics
<b>Crowding out number of jobs</b>	77,600	45,700	32,500	31,500	<b>187,300</b>
<b>Crowding out value creation (millions of euros)</b>	7,600	6,200	2,800	3,700	<b>20,300</b>
<b>Crowding out tax revenues (millions of euros)</b>	2,000	1,620	730	970	<b>5,310</b>

Source: Eurostat, SCB, OECD and PRV (2019), Hardy (2017), and own calculations.

**Value creation per employee is 46 percent higher in industries with intense dependence on intellectual property rights, than in the rest of the Nordic business sector except finance**

Businesses with an intense dependence on intellectual property rights tend to have higher output per employee than other parts of the business sector. On average for the entire Nordic region, the average employee in industries with intense dependence on intellectual property rights creates 46 percent higher economic value than the average employee in the rest of the private sector, excluding finance. A change towards a higher share of the economy with an intense dependence on intellectual property rights could increase GDP per capita in the Nordic region.

**Criminal actors are enriched by immaterial rights infringements, while legal firms are crowded out**

According to Mediavision, there are 5-600 000 Swedish households with illegal IPTV. Infringement of intellectual property rights not only crowds out legitimate services and businesses, but also enriches criminal actors, contributing to stronger criminal networks and less security in society. Preventing trespass is an important part of crime prevention work.

**Municipal public procurements need to stop plagiarized educational material**

Educational material is important to foster knowledge in future generation. However, there are grey actors that produce schoolbooks which include plagiarized content. These actors can press costs lower than law abiding companies, and thus win public procurement. In the long run, immaterial rights infringement can undermine the quality of school material, and thus reduce the general knowledge level of the future generation.

**AI-development must respect intellectual property**

Artificial intelligence solutions, such as ChatGPT, are increasingly popular and will in the coming years play a key role in economics. These programs have been trained in knowledge by reading many thousands of books and texts, gathering information. Yet, the technology firms developing these solutions did not originally pay the immaterial rights holders, which have produced the material in the books and texts. It is not a sustainable development if artificial intelligence solutions are built on violating intellectual property rights.

**Reducing video game piracy promotes green growth**

There are numerous forms of intellectual property infringement in computer games. Games can be uploaded and downloaded illegally, cracked or stolen keys to games can be sold, or entire illegal servers can be set up for pirated games. Creation and consumption of computer games is example of an economic activity which is creating limited environmental impact. This form of green growth and consumption should be encouraged and promoted, which is possible through actions against piracy.

### **Police, customs, and prosecutors need more skills to stop counterfeited products**

Sweden has a long tradition of furniture manufacturing, but there is a big challenge from actors who sell plagiarized furniture online, especially from China. The typical case is that a company designs and produces a furniture and launches it at an event or online. Within one or a few days, or weeks, plagiarized items offered online emerges. The majority of the firms afflicted by piracy in the furniture business are not acting against piracy, and the majority of those that do have not a positive experience. The inability of the legal system to help is a significant problem in itself. More prosecutors with expertise in immaterial rights issues are needed, as well as more efforts from the Police, and the Customs agency.

### **The Swedish Consumer Agency and municipal business offices can play a key role for intellectual property rights**

The Digital Services Act, the EU's regulation on the internal market for digital services, means that the Swedish Consumer Agency has a new role for supervision and compliance control. An important part of this work can be information campaigns aimed at consumers, which inform about why and how consumers can contribute to reducing piracy and infringement of intellectual property rights. Municipal business offices have a role in supporting local businesses with advice. This advising role can be expanded so that each municipal business office has staff educated in providing advice related to protection of intellectual property rights. Additionally, municipalities carry out public procurement and can in this process include conditions about excluding companies that violate intellectual property rights. This is not least relevant in procurement of educational material for schools.

### **Anti-piracy information campaigns are needed in schools**

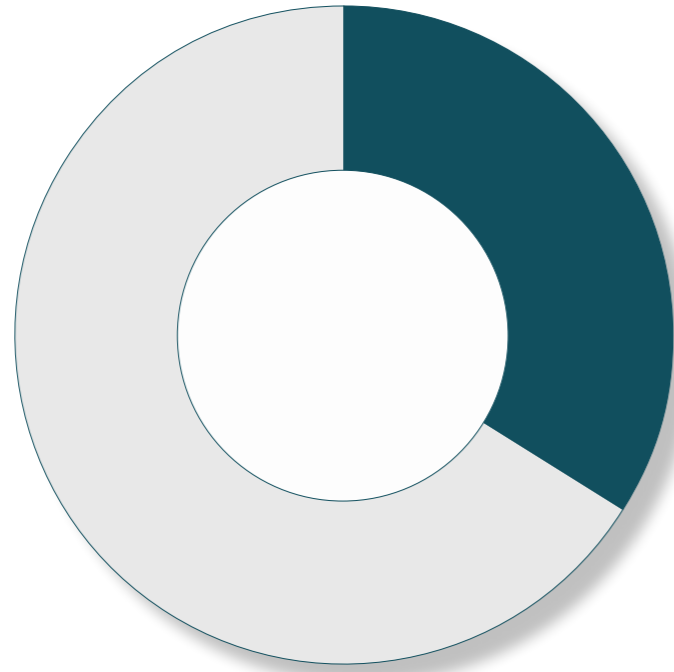
One way of reducing and combating crime is to carry out public awareness campaigns. Anti-piracy educational deterrence efforts can reach a positive result, by increasing awareness of the problems and consequences caused by piracy. Previously, Swedish schools had anti-piracy lectures. This is again needed, to further a societal understanding of the problems caused by intellectual property infringements.

### **National intellectual property rights strategies are needed**

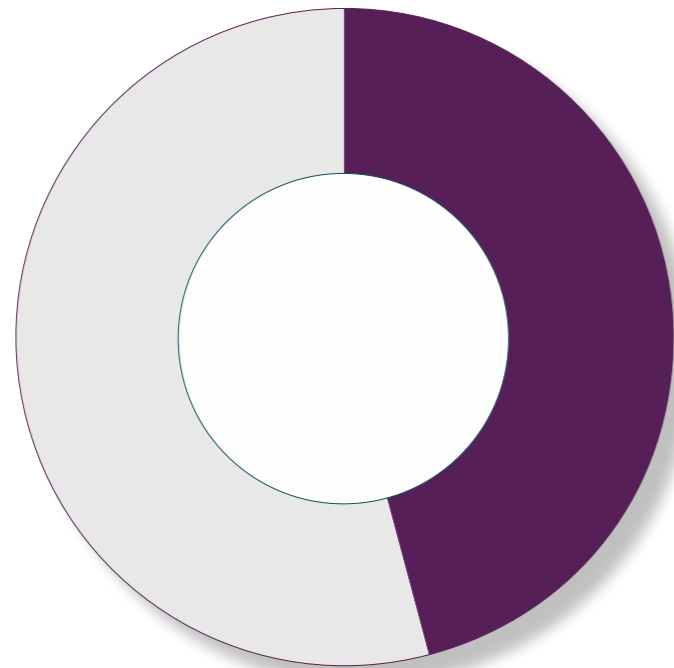
Political reforms are needed to improve the situation. Sweden and the neighboring Nordic countries need national intellectual property strategies. It is important that such strategies include: information efforts to the public, strengthened opportunities to act against infringements in live events, simpler blocking procedures against illegal services, clarification of the responsibility of intermediaries, and that AI development takes place with respect for intellectual property rights issues. A comprehensive approach is needed to create real change.

### Figure 1. Societal benefits of immaterial value creation


Circle filled to 34% of the private sector jobs of Sweden, Denmark, and Finland exist in businesses with intense dependency on intellectual property rights. This is for all private sector employment, excluding finance.

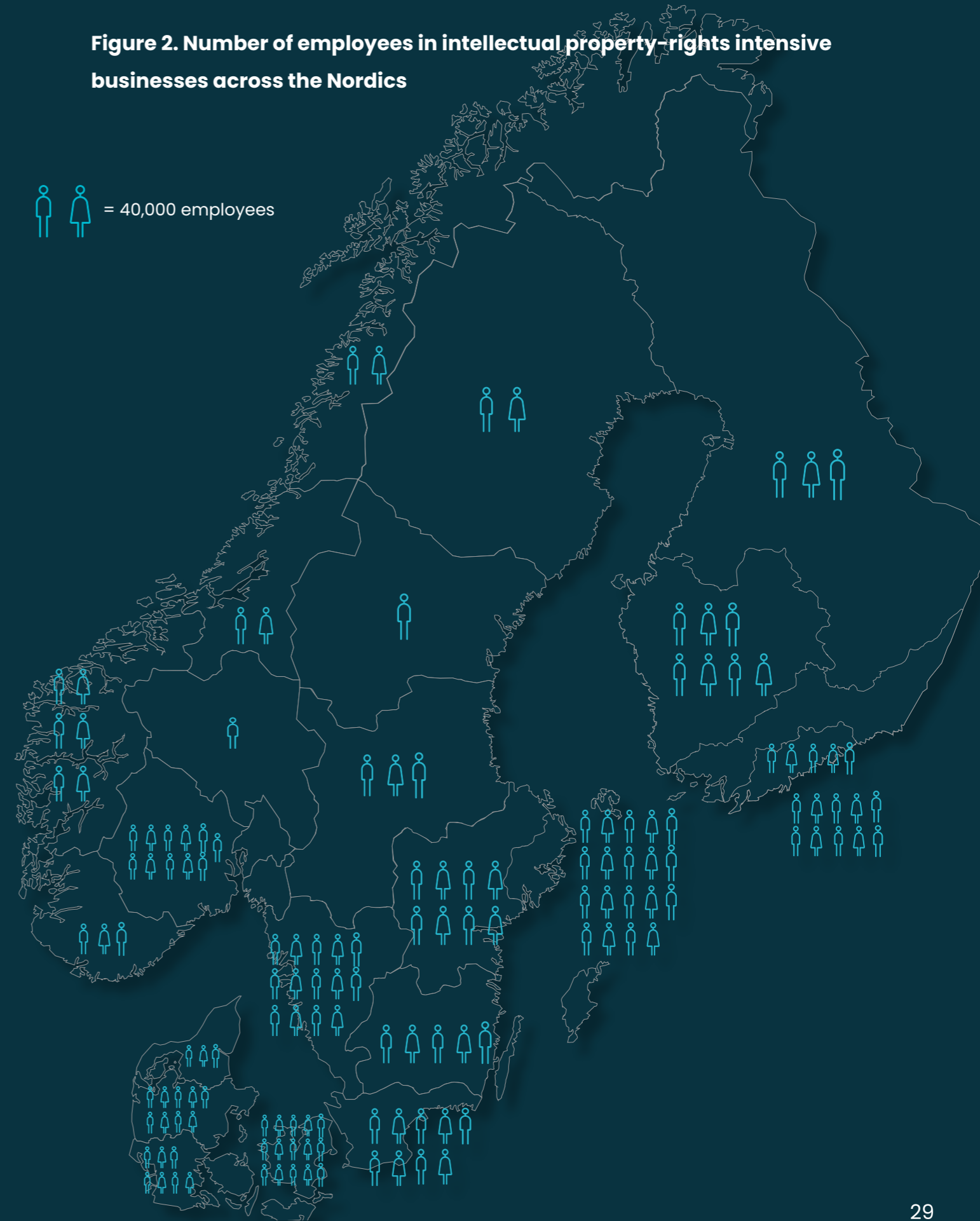


Circle filled to 46% The same businesses create 46% of the value added in the private sector economy, excluding finance, of the three Nordic economies.



### Figure 2. Number of employees in intellectual property-rights intensive businesses across the Nordics

 = 40,000 employees



# Intellectual property rights and economic progress

This study is published in the form of recurring index. It measures how much of the jobs, and economic value created, in the Nordic nations, are linked to businesses that are intensely dependent on intellectual property rights. Essentially all law-abiding firms in a modern economy are dependent on intellectual property rights to some degree, for example protection of the trademark of the business. Some businesses are however intensely dependent, which means that their operations could not happen if they did not have protection for trademarks, patents, copyright, and design rights.

The economic contribution of businesses with intense dependence on intellectual property rights is calculated in Sweden, Denmark, Finland, and Norway – on a national as well as regional level. Following this, an estimate is made on how many jobs and how much value creation is crowded out, in each country and region, due to intellectual property rights violations. Thus, the economic burden of counterfeiting and piracy can be estimated. This study also includes results from semi-structured interviews from Swedish industry representatives, on how the challenge of intellectual properties violations have changed during the last year. Based on the interviews and recent development, concrete solutions to reducing the burden of immaterial rights violations are presented.

## Immaterial rights are the foundation of the knowledge economy

To understand intellectual property rights and why they matter to the modern economy, a brief overview of the evolution of market-based economics is useful. Enterprise and market economy evolved already 4,000 years ago in ancient Babylonia and Assyria. This ancient market tradition however lacked intellectual property rights. The first intellectual property rights, in the forms of patents, evolved much later in the renaissance cities of Italy. Historically, it was not before

the market economy was combined with intellectual property rights that the knowledge economy could emerge.<sup>1</sup> Throughout history, advanced technologies have been created that were either lost or not improved on, since they existed in economies without intellectual property rights. A couple of examples are carbon nanotubes incorporated in the structure of steel and clay and early galvanic cells (batteries). While often believed to be modern age discoveries, both technologies in earlier form existed already some two thousand years ago.<sup>2</sup> Yet while these technologies in early form have existed for long, they did not evolve for long and were rediscovered in the modern era. The same is also true of other technologies, including mechanical computing devices. A key reason is that these early developments occurred in economic systems with strong protection for physical property rights, but where intellectual property rights did not yet exist.

The first known patent was awarded in 1421 by the Republic of Florence. The receiver was the architect Filippo Brunelleschi, who had invented a barge with hoisting gear, which made it possible to carry marble along the Arno River. Brunelleschi was granted exclusive rights to the fruits of his invention for a three-year period.<sup>3</sup> In 1665, the British and French simultaneously launched the first scientific journals of the world, the French *Journal des sçavans* and the British *Philosophical Transactions of the Royal Society*.<sup>4</sup> The scientific journal and the patent right were crucial to the scientific and industrial revolution of the Western world. In essence, they granted property rights to ideas, and can thus be seen as an extension of market institutions from the area of material values to the area of immaterial values. Copyright, design rights and trademarks are other intellectual property rights innovations that paved way for the modern knowledge economy.

When the European industrial revolution occurred, patents were in place and those who had invented new technologies encouraged them to be spread since they gained from that as patent holders. Music could evolve as a business in Europe, once copyright existed, and the intellectual property rights protection that evolved for protecting music notes would later be important for laying the

1 Sanandaji (2018).

2 Reibold et.al (2006); Keyser (1993).

3 MacLeod (2002).

4 Kronick (1976)



groundworks for intellectual property rights protection of computer code.<sup>5</sup> Since intellectual property rights existed and evolved, the European market model, as well as the US market model, could push for systematic innovation.

Thomas Edison revolutionized innovation and played a key role in laying the ground for much of the digital revolution, by establishing the first industrial research laboratories in the late 19<sup>th</sup> century USA, which also included the world's first film studio. This was possible because the business model was not about making one invention, manufacture and sell it, but to create value through the invention process itself, via patents. This form of broad-scale innovation was simply not possible before intellectual property rights existed, which explains why two millennia before Thomas Edison the technology to make batteries existed, but not the framework for developing the concept of electrification. Some 150 years have passed since Edison founded the first industrial research laboratories in Menlo Park, in the Santa Clara Valley. The same valley has since been nicknamed Silicon Valley and is, by wide margin, the most important centre for technological progress in the world.

Immaterial values differ from physical values simply in that they lack physical form. Earlier in history the great part of economic value was created in physical form—for example agriculture, manufacture of tools to work farms with and construction of buildings. Today the economy relies on a mixture of material and immaterial value creation. Example of immaterial values include innovations, business ideas, designs, program codes and digital content in the form of film and music – which are protected by intellectual property rights.

### **Role of immaterial rights in economic progress**

Knowledge is, together with capital, labour, and natural resources, a cornerstone of economic activity.<sup>6</sup> A combination of technological innovations, new ways of organizing work processes, organizational changes and service innovations drive long-term progress.<sup>7</sup> Immaterial value creation in the form of business ideas, technological innovation and digital content is a key part of many

<sup>5</sup> Sanandaji (2021).

<sup>6</sup> Drucker (2011, originally published in 1969); Klenow & Rodríguez-Clare (1997); Latzer, Matsuyama, & Parenti (2019).

<sup>7</sup> See for example Grossman and Helpman (1993), Hasan & Tucci (2010), Soete (2011) and Tamura et al. (2019)

modern businesses. Immaterial values can result from investments in organized knowledge, made over a long period. In some businesses, such as film, music, programming, and computer game design, nearly all value created is in immaterial form since the output is digital content. Intellectual property rights additionally play a key role in technology transfer between firms, and between countries.<sup>8</sup>

***“Immaterial values can result from investments in organized knowledge, made over a long period. In some businesses, such as film, music, programming, and computer game design, nearly all value created is in immaterial form since the output is digital content.”***

Within the research literature, there are two viewpoints on intellectual property rights protection. The first is that intellectual property rights protect important values and that without such protection innovation would be considerably less rewarding and thus much rarer. The other perspective is that excessive utilization of, for example, patents can hinder growth. A study by Richard Gold, Jean-Frédéric Morin and Erica Shadeed actualizes the issue by studying the level of intellectual property rights protection in 124 economies during the period between 1995 and 2011. The study finds that higher level of intellectual property rights protection is indeed associated with higher rates of economic growth. The results are consistent with two casual pathways explored in other literature, namely that intellectual property leads to greater degree of technology transfer and increased domestic innovation activity.<sup>9</sup>

Pedro Cunha Neves and co-authors have in a study published in 2021 conducted a literature review and meta-analysis. Their finding is that while the empirical evidence of the effects on intellectual property rights on innovation and growth is

<sup>8</sup> Sundaram, Rajavenkatesan Prema (2020).

<sup>9</sup> Gold, Morin & Shadeed (2019).

mixed, overall intellectual property rights have a positive effect on innovation and growth. This effect is stronger in developed economies compared to developing economies.<sup>10</sup> Modern research supports the idea that intellectual property rights strengthen economic growth and innovation. Intellectual property rights need to be balanced, rewarding investments in ideas and digital content are protected, as well as allowing new innovators to enter the market.

In 2021 the European Union Intellectual Property Office (EUIPO) and the European Patent Office (EPO) in cooperation published a study, based on analysing a sample of over 127,000 European firms, to compare the economic performance of firms that did own intellectual property rights. The intellectual property rights included in the study were patents, designs, trademarks, or any combination of the three. It found that firms that do own intellectual property rights generate on average 20 percent higher revenue per employee, compared to their counterparts without a portfolio of intellectual property. Additionally, the firms with intellectual property rights paid on average 19 percent higher wages, compared to firms without intellectual property portfolio.<sup>11</sup>

### **Cracking down on intellectual rights infringement fosters innovation**

China is a country where many actors that infringe intellectual property rights exist. This is creating a limitation on economic progress in China itself. In a recent 2023 paper, Chinese economists Jianqiang Chen, Pei-Fang Hsieh, and Kun Wang, utilize a quasi-natural experiment in order to investigate the effects of government crackdown on intellectual rights infringement and counterfeiting. They found that patent counts and citations increased significantly for companies in industries with a high risk of intellectual property violations, following the government crackdowns. The result was more research and development investments, and firms focusing more on innovation patents.<sup>12</sup> Recent research thus confirms that firms with strong reliance on intellectual property rights play a key role in economic development. Protecting intellectual property rights are an essential ingredient in economic policy, not least for fostering growth of knowledge intensive jobs high up in the value chain, which drive economic progress and exports.

<sup>10</sup> Neves et al. (2021).

<sup>11</sup> EPO & EUIPO (2021).

<sup>12</sup> Chen, Hsieh, & Wang (2023).

***“Intellectual property rights are an essential ingredient in economic policy, not least for fostering growth of knowledge intensive jobs high up in the value chain, which drive economic progress and exports.”***

### **Knowledge-based capital is a driver for green growth**

Knowledge-based capital is a term for business investments in assets that are non-physical, such as research and development, software and other data, patents, new organizational processes, designs, and firm-specific skills. In a study from 2021, Mattia Di Ubaldo and Iulia Siedschlag examine investments in knowledge-based capital in Ireland, during the period 2006-2012. It is shown that investments in knowledge-based capital are positively associated with firm productivity, with a ten percent increase in investments in knowledge-based capital being associated with a three percent productivity gain on average.<sup>13</sup>

Qiuqin He, Maria Guijarro-Garcia, and Juan Costa-Climent, examine in a study from 2022 the productivity effect of knowledge-based capital in China, with data from a panel of Chinese companies during the period 2013-2018. Knowledge-based capital, particularly computerised information, and economic competency, is shown to contribute significantly to firm productivity.<sup>14</sup> Marie Le Mouel and Alexander Schiersch further show in a study published in 2020, that frontier firms that lead economic development within their industries, rely strongly on knowledge-based capital.<sup>15</sup>

***“Fostering knowledge-based capital thus is not only central for economic progress, but also to achieve the goal of green growth.”***

<sup>13</sup> Di Ubaldo & Siedschlag.

<sup>14</sup> He, Guijarro-Garcia, & Costa-Climent (2022).

<sup>15</sup> Le Mouel & Schiersch (2020).

While knowledge-based capital plays a key role in economic growth, there is typically only a small environmental footprint associated with growth based on knowledge-based capital. If for example an industry firm shifts production to a new patent, the value produced can increase significantly, while production based on the new patent does not need to lead to a higher environmental footprint. New organizational processes, computer code used for a new popular computer game, and implementations of new designs, similarly have limited environmental footprint, while contributing to economic progress. Fostering knowledge-based capital thus is not only central for economic progress, but also to achieve the goal of green growth.

## The evolving challenge of intellectual property rights infringements

Businesses with intense reliance on intellectual property rights play a key role in job and value creation throughout the Nordic nations. At the same time, the total economic loss and the tax revenue loss of piracy and counterfeiting amounts to significant figures. Combating piracy and counterfeiting and stimulating business growth in firms with intense dependence on intellectual property rights, is an important and integral part of economic policy. Interviews with representatives for different intellectual property rights intensive industries in Sweden have been carried out, during October and November 2023, to better understand the challenges faced by different parts of the economy, as a result of infringement.

### TV piracy in Sweden alone creates billion kronor in revenue for criminals

A new study by EUIPO (European Union Intellectual Property Office) looks at immaterial rights infringements in films, music, publications, programs and TV during the period between 2017 and 2021, in the EU-countries. It is found that piracy of tv-material accounted for nearly half (48 percent) of the infringements, followed by books (28 percent), films (11 percent), computer programs (7 percent), and music (6 percent). Additionally, infringements are increasingly occurring in live events, such as sports broadcasts.<sup>16</sup> Indeed, TV-piracy is a major problem, which the Swedish tax agency recently has shifted focus to. Significant revenues are created by TV-piracy for criminal organizations.<sup>17</sup> A study by EUIPO has found that fully 8.5 percent of the Swedish population are in households using illegal TV-services. This is following the Netherlands the second highest rate in the union. There are some 620 000 individuals in Sweden, between the ages 16-74 years, with access to illegal TV-services, enriching criminal organizations with subscription fees.<sup>18</sup>

<sup>16</sup> EUIPO (2023).

<sup>17</sup> Dagens Juridik (2023).

<sup>18</sup> EUIPO (2019).

***“While the legal providers of TV-services are struggling financially, criminal groups have substantial revenues from subscriptions.”***

Sweden currently has a major issue with crime, and the fact that more than a half million people are in households with subscription to illegal TV is relevant in this regard. For long, this form of intellectual properties crime has not been prioritized by the police and courts. In fact, it does not only crowd out jobs and economic progress, but like other crime also enriches criminal clans. Representatives from the Swedish TV-industry point out that the country has a small market, with some 40 percent of produced content being local, with the remainder being international content. When the market is so small, piracy can have a substantial effect in making production of movies and TV-series unsustainable. According to Mediavision, there are 490 000 Swedish households with illegal IPTV.<sup>19</sup> By the end of 2023, the Swedish tax authority released a report based on 80 investigations of pirated TV-services.<sup>20</sup>

While the legal providers of TV-services are struggling financially, criminal groups have substantial revenues from subscriptions. There are many online ads pushing for illegal TV-services, and many people are illegal agents selling subscriptions. Clearly, there is a need for policymakers to stop the flow of funds, as well as the online advertisements. When the criminal activity of illegal TV-services becomes a subscription service for half a million in a small country such as Sweden, it is something that really needs to be addressed if confidence in the rule of law is to be maintained. In the music business, the challenge with piracy has been reduced compared to previous years. There are however signs of new issues, such as streaming manipulation on platforms such as Spotify and Youtube, which could be part of gang money laundering.

A conclusion is that the easier it is for the consumer to use the content illegally, the more risk is created for the industry. If some of the consumers of a new film watch it illegally, instead of paying to see it legally, it can have a significant

<sup>19</sup> Mediavision (2022).

<sup>20</sup> Skatteverket (2023).

impact on the profitability of the project. It can be the difference between the project running with a surplus, and it just turning around, or running at a loss. In particular, uncertainty and risk are created for smaller players in the industry – who live on individual projects for a longer period of time. In order to reduce the problem of piracy, more resources should be allocated to preventing piracy, for example through information campaigns in schools. Prevention, for example through informing pupils in schools about the detrimental effects of piracy, is an important aspect, of how government agencies can strive towards strengthening intellectual property rights.

***“In the long run, immaterial rights infringement can undermine the quality of school material, and thus reduce the general knowledge level of the future generation.”***

### **Municipal public procurements can benefit educational material with plagiarised content**

Consumption of books, much like music, is shifting towards the digital. Instead of buying individual books, increasingly people are buying the subscription to a service where they can access a large library of online books. This form of delivery solution reduces piracy, but infringements still exist, not least for books used in education. Coursebooks, particularly for higher studies, are sometimes illegally copied and distributed. Another aspect of the problem is companies that produce school materials, and have a model based on systematically rounding immaterial rights. A company can produce a schoolbook on a particular subject, by gathering previous writings, and market this product. When those who have produced the material take legal actions, royalties are settled, but the underlying business idea is to not pay all stakeholders, since most do not push for legal action. Much of the material is thus obtained for free, through a grey business model that is not outright piracy, but close to it. This grey model reduces prices, which is why the companies can win public procurement. Municipalities in Sweden and other parts of the Nordics need to have routines for procuring school literature from companies that are focused on producing value, not stealing the value from others. In the long run, immaterial rights infringement can undermine the

quality of school material, and thus reduce the general knowledge level of the future generation.

***“It is not a sustainable development if artificial intelligence solutions are built on violating intellectual property rights.”***

### **Artificial intelligence development needs to respect intellectual property**

Another important issue relates to the development of artificial intelligence. Artificial intelligence solutions, such as ChatGPT, are increasingly popular and will in the coming years play a key role in economics. These programs are trained in knowledge by reading many thousands of books, gathering information. Yet, the technology firms developing these solutions are not paying the immaterial rights holders, which have produced the material in the books. Book publishers are currently adapting by writing explicitly that the material in the books cannot be used freely for artificial intelligence learning, yet following up even this will prove a challenge. Given that artificial intelligence is a growing and important field, this challenge needs to be addressed. It is not a sustainable development if artificial intelligence solutions are built on violating intellectual property rights.

### **Reducing piracy in computer games, is a way of promoting green growth**

Another sector that is affected by piracy is the computer games developers. There are numerous forms of intellectual property infringement in computer games. Stolen games can be downloaded, cracked or stolen keys to games can be sold, or entire illegal servers can be set up for pirated games. There is also plagiarism, where a game is produced that imitates an original, and where consumers looking for the original can be tricked into paying for the plagiarized game instead. Plagiarism can be more difficult to protect against, it can be borderline if a game is similar to another, or if it is plagiarism. Even trade with in-game-items can be part of piracy and money laundering.

Creation and consumption of computer games is example of an economic activity which is creating very limited environmental impact. This form of green growth and consumption should be promoted, which is possible through actions against piracy. The original impulse to make games is artistic, combining feeling and reason. Creators may experience their work being distorted by intellectual property infringement. The economic driving force decreases, it affects the conditions of production and the conditions of competition. Intellectual property infringement undermines the business model. In the computer games industry, as in films and movies, smaller actors can be hit more harshly by piracy and plagiarism than larger actors. The reason is that larger actors have better possibilities to protect themselves and also more diversified revenue streams.

***“Creation and consumption of computer games is example of an economic activity which is creating very limited environmental impact. This form of green growth and consumption should be promoted, which is possible through actions against piracy.”***

### **Police, customs, and prosecutors need more skills to stop piracy of products such as furniture**

Sweden has a long tradition of furniture manufacturing, but there is a big challenge from actors who sell plagiarized furniture online, especially from China. The typical case is that a company designs and produces a furniture and launches it at an event or online. Within one or a few days, or weeks, plagiarized items offered online emerges. This leads to market losses, as well as a limited willingness to invest. Companies that are affected can pursue legal action, but this is often a time consuming and expensive process. Amongst the members of The Swedish Federation of Wood and Furniture Industry, 85 percent have experienced suspected piracy.

Of those who have been affected, 85 percent did not take legal action. Of those who have taken legal action, 60 percent are hesitant to do so again. Thus, the majority of the firms afflicted by piracy in the furniture business are not acting against piracy, and the majority of those that do have not a positive experience. The inability of the legal system to help is a significant problem in of itself. More prosecutors with expertise in immaterial rights issues are needed, as well as more efforts from the Police, and the Customs agency. Change is needed, until the large majority of companies that follow up intellectual property infringements experience that the system is working properly. The current situation, where companies that follow up crime are hesitant to do the same again, is a stark warning that the government is failing in protecting law-abiding firms.

***“The inability of the legal system to help is a significant problem in of itself. More prosecutors with expertise in immaterial rights issues are needed, as well as more efforts from the Police, and the Customs agency.”***

## **Schools, municipalities, and public agencies can strengthen intellectual property rights**

A number of policy options exist for strengthening intellectual property rights, on the international and national level. The EU can for example put pressure on countries such as China and Turkey to stop infringement and piracy against European firms, during trade negotiations and other diplomatic contacts. National policymakers can strengthen the legal protection for intellectual property rights by updating legislation, and by providing better funding for the legal system so that for example the courts have greater resources for following up intellectual property rights infringements. There is also an important role that municipal business offices can play, through education campaigns in schools.

### **Municipal business offices and government agencies play key role for intellectual property rights**

Municipal business offices have a role in supporting local businesses with advice. This advising role can be expanded so that each municipal business office has one or more staff educated in providing advice related to protection of intellectual property rights. Additionally, municipalities carry out public procurement and can in this process include conditions about excluding companies that violate intellectual property rights. This is not least relevant in procurement of educational material for schools.

Another issue is how municipalities and government agencies act in public procurements, in regards of intellectual property rights ownership. During 2022, the Confederation of Swedish Enterprise carried out an analysis of 197 randomly selected public procurements advertised by Swedish municipalities and government agencies, based on procurements containing the heading “intellectual property rights”. It was found that the municipalities and government agencies asked for the ownership of the intellectual property rights in 94 percent

of the cases.<sup>21</sup> While in some circumstances this can be a relevant request, overall, the role of municipalities and government agencies is not to themselves conduct business activities. Routinely asking for the intellectual property rights to be transferred during public procurements signals that municipalities and government agencies have a limited understanding of how the issue should be handled. These requests can be difficult to handle for many firms, who wish to provide various solutions and services, while retaining their intellectual property rights.

***“Municipal business offices need to increase their own competency about intellectual property rights. This would fill the dual role of supporting local businesses with knowledge, and supporting the municipalities themselves to find ways of procuring services and solutions, without typically requiring providing firms to give up ownership of their intellectual properties.”***

Municipal business offices need to increase their own competency about intellectual property rights. This would fill the dual role of supporting local businesses with knowledge, and supporting the municipalities themselves to find ways of procuring services and solutions, without typically requiring providing firms to give up ownership of their intellectual properties. Government agencies similarly would need better education on intellectual property rights amongst their staff, so that their own public procurements can be more aligned with the ability of businesses to retain their intellectual properties. Implementation of the EU Digital Services Act means that government agencies have a redefined role in regulating the market. For example, the Swedish Consumer Agency will have a greater role in consumer protection in the digital market.<sup>22</sup> An important way to achieve this goal can be through information campaigns to the public.

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<sup>21</sup> Confederation of Swedish Enterprise (2022).

<sup>22</sup> SOU 2023:2, p. 14.

## **Information campaigns needed in schools, to raise awareness**

One way of combating crime is to carry out public awareness campaigns. Some people mentally justify their own theft, for example shop lifting, by convincing themselves that this is not an actual relevant crime. Information campaigns on the effect that shoplifting has on the local business, that in total it comprises a significant societal cost, might change the attitude of the individual. Information campaigns also signal to the individual that society is acting to reduce crime, which might impact the behaviour of the individual. While information campaigns in themselves are not the solution to solving crime, together with actions from the police and law authorities, they can lead to positive results.<sup>23</sup> Anti-piracy educational deterrence efforts similarly can reach a positive result, by increasing awareness of the problems caused to society by individuals engaging in piracy.<sup>24</sup> Previously, Swedish schools had anti-piracy lectures. This is again needed, to further a societal understanding of the problems caused by intellectual properties theft.

***“Previously, Swedish schools had anti-piracy lectures. This is again needed, to further a societal understanding of the problems caused by intellectual properties theft.”***

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<sup>23</sup> McGuire et.al. (2021).

<sup>24</sup> Jeong, Yoon, & Khan (2020).

## Methodology for calculations

This study examines detailed structural business statistics, coupled with quarterly indicators of recent development, to estimate the role that industries with intense dependence on intellectual property right have in the Nordic economies. A report published by EUIPO, the *European Union Intellectual Property Office*, has concluded that essentially all business sectors utilize intellectual property to a certain extent and that some can be categorized as intensely dependent on intellectual property. The study, which was originally published in 2011 and later updated in 2016, divides the business sector in two groups: sectors that are intensely dependent on intellectual property and sectors that are not.<sup>25</sup> This study utilizes the EUIPO classification of business sectors, together with the latest available structural business information coupled with short-term business statistics for recent years, in order to examine the size of the share of the business sector in the Nordic countries and their regions that are intensely dependent on intellectual property.<sup>26</sup>

Table 4 shows the division of the private sector in businesses that are intensely dependent on various forms of intellectual property rights and those that are not. Structural business information has been gathered from the European Union's statistical agency Eurostat. An analysis of what share of economic activity occurs in firms with intense dependency on intellectual property rights has been carried out for the business sector of each Nordic country excluding agriculture, forestry, fishing, and welfare services. On regional basis the same analysis has been done with regards to employment. The value added regionally has been calculated based on the assumption that the value added per job is the same for the different regions that make up the various countries. Table 5 shows the division of economic activity, in six different intellectual property rights intensive group of industries, that is used in this study.

<sup>25</sup> See EUIPO (2013, 2016).

<sup>26</sup> The analysis has been limited to four forms of intellectual property: trademarks, patents, design rights and copy right. The other two intellectual property in the EUIPO studies, geographical indicators, and plant rights, are specific cases whose importance mainly concerns parts of the food industry and are not included in this study. The oil and gas sector are, in this study, not included as intensely dependent on intellectual property rights.

**Table 4. Intense dependency on various forms of intellectual property rights**

	Trademark	Design	Patents	Copyright	No intense intellectual property rights dependency
Manufacture of textiles	X	X	X		
Manufacture of basic pharmaceutical products & preparations	X	X	X		
Manufacture of rubber & plastic products	X	X	X		
Manufacture of other non-metallic mineral products	X	X	X		
Manufacture of computer, electronic & optical products	X	X	X	X	
Manufacture of motor vehicles	X	X	X		



Manufacture of other transport equipment	X	X	X		
Manufacture of electrical equipment	X	X	X		
Manufacture of machinery & equipment	X	X	X		
Manufacture of furniture	X	X	X		
Manufacture of tobacco products	X	X	X		
Other manufacturing	X	X	X		
Scientific research and development	X	X	X		

Manufacture of wearing apparel	X	X			
Manufacture of leather & related products	X	X			
Advertising and market research	X	X		X	
Other professional, scientific and technical activities	X	X	X		
Telecommunications	X		X	X	
Wholesale trade, except of motor vehicles and motorcycles	X		X		
Manufacture of chemicals & chemical products	X		X		

Manufacture of food products	X		X		
Motion picture, video and television programme production, sound recording and music publishing activities	X			X	
Computer programming & consultancy	X			X	
Renting and leasing	X			X	
Information services	X			X	
Programming & broadcasting	X			X	
Printing and reproduction of recorded media	X			X	

Publishing	X			X	
Manufacture of beverages	X				
Office administrative, office support and other business support activities	X				
Air transport	X				
Wholesale and retail trade and repair of motor vehicles and motorcycles	X				
Travel agency, tour operator reservation service & related activity	X				
Water transport	X				

Remediation activities & other waste management services					X
Employment activities					X
Architectural and engineering activities; technical testing and analysis					X
Waste collection, treatment & recycling					X
Sewerage					X
Civil engineering					X
Retail trade, except of motor vehicles and motorcycles					X

Electricity, gas, steam & air conditioning supply					X
Real Estate					X
Mining					X
Accommodation					X
Legal and accounting activities					X
Construction of residential & non-residential buildings					X
Land transport and transport via pipelines					X

Food and beverage service activities					X
Postal and courier activities					X
Repair of computers and personal and household goods					X
Security & investigation activities					X
Specialised construction					X
Manufacture of fabricated metal products, except machinery & equipment					X
Manufacture of metals					X

Manufacture of paper & paper products					X
Manufacture of wood products except furniture					X
Services to buildings & landscape activities					X
Warehousing and support activities for transportation					X
Water supply; sewerage, waste management and remediation activities					X
Activities of head offices; management consultancy activities					X
Veterinary activities					X

**Table 5. Division of economic activity in intellectual property rights intensive group of industries**

Intellectual property rights intensive group of industries	Economic activity (NUTS2 classification)
IT/technology	Manufacture of computer, electronic and optical products
IT/technology	Telecommunications
IT/technology	Computer programming, consultancy and related activities
Knowledge intensive industry	Manufacture of food products
Knowledge intensive industry	Manufacture of beverages
Knowledge intensive industry	Manufacture of chemicals and chemical products
Knowledge intensive industry	Manufacture of basic pharmaceutical products and pharmaceutical preparations
Knowledge intensive industry	Manufacture of rubber and plastic products

Knowledge intensive industry	Manufacture of other non-metallic mineral products
Knowledge intensive industry	Manufacture of motor vehicles, trailers and semi-trailers
Knowledge intensive industry	Manufacture of other transport equipment
Media/entertainment	Printing and reproduction of recorded media
Media/entertainment	Publishing activities
Media/entertainment	Motion picture, video and television programme production, sound recording and music publishing activities
Media/entertainment	Programming and broadcasting activities
Fashion/design	Manufacture of textiles
Fashion/design	Manufacture of wearing apparel
Fashion/design	Manufacture of leather and related products

Trademark dependent trade	Wholesale and retail trade and repair of motor vehicles and motorcycles
Trademark dependent trade	Wholesale trade, except of motor vehicles and motorcycles
Trademark dependent trade	Manufacture of tobacco products
Trademark dependent trade	Water transport
Trademark dependent trade	Air transport
Knowledge intensive services	Information service activities
Knowledge intensive services	Scientific research and development
Knowledge intensive services	Advertising and market research
Knowledge intensive services	Other professional, scientific and technical activities
Knowledge intensive services	Rental and leasing activities

Knowledge intensive services	Travel agency, tour operator reservation service and related activities
Knowledge intensive services	Office administrative, office support and other business support activities

# Crowding out due to counterfeiting and piracy

Businesses that are intensely dependent on intellectual property rights, are also more sensitive to intellectual property rights violations, such as counterfeiting and piracy. Globally counterfeiting and piracy represents a multi-billion-dollar illegal industry, which creates a significant drain on the real economy. Counterfeiting and piracy crowds out legitimate economic activity and facilitate an underground economy, depriving public tax revenues and limiting legitimate private sector growth and job creation.<sup>27</sup> In 2019 the OECD in co-operation with the Swedish Patent and Registration Office (PRV) published a report, that estimates the total global trade of counterfeit goods, based on violating the intellectual property rights of Swedish enterprises, to amount to 28.3 billion SEK, amounting to two percent of the international sales of goods manufactured in Sweden. This estimate is for the trade in the year 2016. For the same year, it is estimated that counterfeit and piracy reduced public tax revenues in Sweden by 7.54 billion SEK.<sup>28</sup>

The above estimate is about measuring the direct cost of counterfeiting and piracy, but there are also indirect costs to consider. As an OECD study concluded already in 2005, there are numerous ways through which counterfeiting and piracy disturb the economy: “In addition to the direct impact, counterfeiting and piracy can have significant indirect effects. These would include effects on GDP, employment, tax revenues, foreign investment, trade, and innovation. Most of the work that has been on this has focused on analysing the dynamic effects of reduced investments (caused by profit losses) on GDP, employment, and tax revenues. Other research has focused on the effect of the strength of IPR on economic performance (i.e., economic growth, foreign direct investment, trade, and innovation). Although evidence is mixed, the studies show that strong IPR regimes generally tend to be associated with positive effects in all areas.”<sup>29</sup>

<sup>27</sup> Frontier economics, ICC Bascap, International Trademark Association, and TECXIPIO (2016).

<sup>28</sup> OECD and PRV (2019).

<sup>29</sup> Olsen (2005), quote p. 6.

Jeff Hardy, former director of the International Chamber of Commerce, has in a 2017 article published in *World Trademark Review*, published an estimate of how the total economic loss from counterfeiting and piracy relates to the direct trade loss. According to his estimates, each euro loss in international trade corresponds to total loss of 1.73 euro. The reason is that one also needs to account for domestic counterfeiting and piracy, for counterfeiting and piracy of film, music, and software (which are not included in direct trade loss measurements), since private sector activity in intellectual property rights dependent sectors are undermined, jobs are lost, and international investments are limited by counterfeiting and piracy.<sup>30</sup>

According to SCB (Sweden’s statistical agency) database, the volume of international exports in 2022 was 3,177 billion SEK, compared with 1,888 billion in 2016. Export data for 2023 are not still available when this study is being written, assuming the trend of growth between 2019 and 2022 continues, it would be circa 3,424 billion Swedish SEK. By factoring in the trade growth during the period and utilizing the multiplier 1.73 to account for the overall economic impact, the previous OECD and PRV estimates from 2016 can be used to calculate the total economic impact of piracy and counterfeiting on the Swedish economy. The result is as follows: Sweden lost 88.8 billion SEK by piracy and counterfeiting in 2023, mainly through direct trade loss, but also digital piracy and undermining of private sector activity. With the same method, the total loss of tax revenues amounts to 23.7 billion SEK, assuming that tax revenue loss percentage is the same for digital piracy and indirect effects of piracy and counterfeiting, as for the direct trade loss. These sums amount to circa 7.6 billion euros of lost economic value, and a tax loss of 2.0 billion euros, for Sweden during 2023.<sup>31</sup>

As shown in this study, the value creation in all businesses with intense dependency on intellectual property values, amounted to about 124.7 billion euros in Sweden during 2023. The economic loss of counterfeiting and piracy amounts to circa 6.1 percent of the total value created, in Sweden. This study assumes that the same share is true for the other Nordic countries and the regions within the countries. It is further assumed that same share of jobs as economic activity is lost due to piracy. Based on these assumptions, the total loss of jobs and economic activity

<sup>30</sup> Hardy (2017).

<sup>31</sup> Based on a 11.68 SEK/euro value, which was the exchange rate for early December 2023 when this calculation was carried out.

due to piracy and counterfeiting is calculated for each country and region. For Sweden, the tax loss due to piracy and counterfeiting amounts to 1.63 percent of total economic value created by intellectual property rights intensive businesses. This share is assumed to be same in the different countries and regions, and so also the tax loss of counterfeiting and piracy is calculated.

***“For the entire Nordic region, there are 187,300 jobs and 20.3 billion euros that are crowded out by counterfeiting and piracy in 2023.”***

The calculations are used, to estimate the crowding out of jobs and value added in businesses with intense reliance on intellectual property rights, based on the 2023 data presented in this study. For Sweden in 2023, counterfeiting and piracy are estimated to have crowded out 7.6 billion euros in value creation and 77,600 jobs, and lead to a tax loss of 2.0 billion euros. For the entire Nordic region, there are 187,300 jobs and 20.3 billion euros that are crowded out by counterfeiting and piracy in 2023. These estimates are based on some simplifying assumptions but allow us to gain a better understanding of the total economic damage that piracy and counterfeiting cause in the Nordics.

Recent research of immaterial rights infringement, by Jeremy Wilson, explains that counterfeiters undermine those investments that firms carry out in research and development, as well as for meeting standards for production and safety. A firm’s own reputation is essentially used to compete against it. Counterfeiting disrupts the market, creates a loss of tax revenues, and creates need of spending to thwart counterfeiting and related crimes. Counterfeiting further leads to revenues for criminal organizations.<sup>32</sup> There are thus many different economic benefits of reducing intellectual property violations.

<sup>32</sup> Wilson (2022).

***“The majority of goods exports from Denmark and Sweden come from firms in sectors of the economy that are intensely dependent on immaterial rights. For all Nordic countries, the majority of the value of import of goods are in sectors of the economy that are intensely dependent on immaterial rights. Strengthening immaterial rights protection is thus an important part of trade policy.”***

Those businesses that are intensely dependent on immaterial rights play a key role in exports and imports. The majority of goods exports from Denmark and Sweden come from firms in sectors of the economy that are intensely dependent on immaterial rights. For all Nordic countries, the majority of the value of import of goods are in sectors of the economy that are intensely dependent on immaterial rights. Strengthening immaterial rights protection is thus an important part of trade policy.

**Table 6. Nordic goods export and immaterial rights intensive businesses**

	Sweden	Denmark	Finland	Norway
Total goods exports, all economic activity (2021 levels expressed in 2023 Euros, billions of Euros)	187	120	82	86
Goods exports from sectors of economy that are intensely dependent on immaterial rights, billions of 2023 Euros	102	77	31	23
Share	54%	65%	38%	27%



**Table 7. Nordic goods imports and immaterial rights intensive businesses**

	Sweden	Denmark	Finland	Norway
Total goods imports, all economic activity (2021 levels expressed in 2023 Euros, billions of Euros)	179	114	86	76
Goods imports from sectors of economy that are intensely dependent on immaterial rights, billions of 2023 Euros	120	81	51	49
Share	67%	71%	59%	65%

In conclusion, political reforms are needed to improve the situation. Sweden and the neighboring Nordic countries need comprehensive national intellectual property strategies. It is important that such strategies have a holistic perspective. They need to include: information efforts to the public, strengthened opportunities to act against infringements in live events, simpler blocking procedures against illegal services, clarification of the responsibility of intermediaries, and that AI development takes place with respect for intellectual property rights issues. Such a comprehensive approach can create real change, reducing criminal activity and encouraging jobs, trade and prosperity.

## Sweden, regional data

In Sweden, firms with an intense dependency on intellectual property rights during 2023 created an added value of nearly 125 billion euros in total and employed close to 1,3 million persons. Tables 8 and 9 show the breakdown of these jobs, and economic value creation, in the different regions of the country. The tables also show how many jobs, and the extent of economic value, that is crowded out by piracy and counterfeiting. In the Stockholm capital region, for example, approximately 25,100 jobs and an economic value of 2.3 billion euros are crowded out due to violations of intellectual property rights.

**Table 8. Number of people employed in businesses with intense dependence intellectual property rights, regions of Sweden 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Stockholm	100,600	65,000	68,500	40,300	700	114,200	<b>23,700</b>
Östra Mellansverige	24,900	71,100	20,500	7,200	1,300	44,300	<b>10,300</b>
Småland med öarna	9,800	53,400	11,200	5,200	600	27,700	<b>6,600</b>
Sydsverige	27,800	65,600	23,700	10,400	700	54,800	<b>11,200</b>
Västsverige	40,400	120,800	31,200	10,600	2,900	81,300	<b>17,500</b>
Norra Mellansverige	8,900	21,900	8,900	2,500	500	21,400	<b>3,900</b>
Mellersta Norrland	5,600	8,800	5,000	1,000	400	8,900	<b>1,800</b>
Övre Norrland	6,800	14,800	6,100	2,000	200	11,200	<b>2,500</b>

**Table 9. Value added (millions of euros) in businesses with intense dependence intellectual property rights, regions of Sweden 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Stockholm	12,000	6m890	4500	3,590	50	10,720	<b>2,300</b>
Östra Mellansverige	2,970	7,540	1,340	640	90	4,160	<b>1,020</b>
Småland med öarna	1,170	5,660	740	460	50	2,600	<b>650</b>
Sydsverige	3,310	6,950	1,560	930	50	5,140	<b>1,090</b>
Västsverige	4,800	12,800	2,050	950	210	7,630	<b>1,740</b>

## Denmark, regional data

In Denmark, firms with an intense dependency on intellectual property rights during 2023 created an added value of 100.9 billion euros in total and employed some 749,000 persons. Tables 10 and 11 show the breakdown of these jobs, and economic value creation, in the different regions of the country. The tables also show how many jobs, and the extent of economic value, that is crowded out by piracy and counterfeiting. In the Copenhagen capital region, for example, approximately 18,300 jobs and an economic value of nearly 2.4 billion euros are crowded out due to violations of intellectual property rights.

**Table 10. Number of people employed in businesses with intense dependence intellectual property rights, regions of Denmark 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Copenhagen	60,500	53,900	54,800	29,900	760	100,900	<b>18,300</b>
Sjælland	3,700	24,900	5,400	1,600	120	23,200	<b>3,600</b>
South Denmark	9,000	65,800	12,000	5,300	980	53,900	<b>9,000</b>
Midtjylland	22,600	66,200	22,600	6,500	2,800	59,700	<b>11,000</b>
Nordjylland	6,800	26,500	5,300	2,300	900	20,200	<b>3,800</b>

**Table 11. Value added (millions of euros) in businesses with intense dependence intellectual property rights, regions of Denmark 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Copenhagen	7,300	7,520	4,670	2,110	70	16,890	<b>2,350</b>
Sjælland	440	3,480	460	120	10	3,890	<b>510</b>
South Denmark	1,090	9,180	1,020	380	90	9,030	<b>1,270</b>
Midtjylland	2,730	9,230	1,920	460	240	10,000	<b>1,500</b>
Nordjylland	820	3,700	450	170	80	3,390	<b>530</b>

## Finland, regional data

In Finland, firms with an intense dependency on intellectual property rights during 2023 created an added value of 45.8 billion euros in total and employed over 530,000 persons. Tables 12 and 13 show the breakdown of these jobs, and economic value creation, in the different regions of the country. The tables also show how many jobs, and the extent of economic value, that is crowded out by piracy and counterfeiting. In the Helsinki capital region, for example, approximately 14,000 jobs and an economic value of 1.2 billion euros are crowded out due to violations of intellectual property rights.

**Table 12. Number of people employed in businesses with intense dependence intellectual property rights, regions of Finland 2022**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Helsinki	55,700	49,200	34,099	19,000	1,300	69,700	<b>14,000</b>
Länsi-Suomi	19,000	71,500	10,700	5,000	2,700	25,600	<b>8,200</b>
Etelä-Suomi	9,700	51,900	8,700	3,000	1,300	23,800	<b>6,000</b>
Pohjois- ja Itä-Suomi	16,700	20,000	8,900	3,700	2,300	18,100	<b>4,300</b>
Åland	600	600	200	200	0	500	<b>100</b>

**Table 13. Value added (millions of euros) in businesses with intense dependence intellectual property rights, regions of Finland 2022**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Helsinki	5,840	4,390	2,250	2,080	70	5,060	1,200
Länsi-Suomi	1,990	6,370	710	540	150	1,860	7050
Etelä-Suomi	1,020	4,630	570	330	70	1,730	500
Pohjois- ja Itä-Suomi	1,750	1,7803	590	410	130	1,310	360
Åland	60	60	10	20	0	30	10

## Norway, regional data

In Norway, firms with an intense dependency on intellectual property rights during 2023 created an added value of nearly 61 billion euros in total and employed close to 517 000 persons. Tables 14 and 15 show the breakdown of these jobs, and economic value creation, in the different regions of the country. The tables also show how many jobs, and the extent of economic value, that is crowded out by piracy and counterfeiting. In the Oslo capital region, for example, approximately 23,900 jobs and an economic value of nearly 1.7 billion euros are crowded out due to violations of intellectual property rights.

**Table 14. Number of people employed in businesses with intense dependence intellectual property rights, regions of Sweden 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Oslo og Viken	52,400	33,500	33,700	22,000	1,000	85,500	<b>13,900</b>
Innlandet	1,500	8,300	9,400	900	300	9,400	<b>1,800</b>
Trøndelag	6,700	13,200	7,200	2,600	500	13,200	<b>2,600</b>
Nord-Norge	1,600	11,800	5,100	1,700	400	10,800	<b>1,900</b>
Agder og Sør-Østlandet	8,200	20,500	6,900	2,600	500	22,000	<b>3,700</b>
Vestlandet	14,700	49,500	10,400	4,300	2,500	40,700	<b>7,500</b>

**Table 15. Value added (millions of euros) in businesses with intense dependence intellectual property rights, regions of Sweden 2023**

	IT	Knowledge intensive industry	Knowledge intensive services	Media	Fashion	Trademark dependent trade	Total estimate crowded out by piracy & counterfeiting
Oslo og Viken	7,180	3,700	3,440	2,240	90	10,600	<b>1,660</b>
Innlandet	210	900	960	90	20	1,170	<b>210</b>
Trøndelag	910	1,460	730	270	40	1,640	<b>310</b>
Nord-Norge	220	1,300	520	180	40	1,340	<b>220</b>
Agder og Sør-Østlandet	1,120	2,260	700	260	40	2,730	<b>430</b>
Vestlandet	2,020	5,460	1,070	440	200	5,050	<b>870</b>

**Intellectual property intensive** sectors tend to have higher output per employee than other parts of the business sector. On average for the four Nordic economies, each job in immaterial rights intensive businesses creates 46 percent more value added to the economy, than in the rest of the economy except finance. Denmark, with a strong pharmaceutical sector, has the greatest difference between value creation in immaterial rights intensive businesses and the rest of the private sector. Only in Norway, where much of national wealth is created in the oil and natural gas sectors, this relationship is the inverse. **A shift towards higher share of the economy with intense intellectual property rights dependency is likely to boost GDP per capita in the Nordic region.**

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