EUROPEAN

POLICYBRIEF

EFFACE
European Union Action to
Fight Environmental Crime

EUROPEAN UNION ACTION TO FIGHT ENVIRONMENTAL CRIME (EFFACE)

Policy Brief 15: Quantifying the Impacts of Environmental Crime

DECEMBER 2015

INTRODUCTION

The EFFACE project undertook an evaluation of data and information sources for many types of environmental crime to confirm what quantified information on its impacts is available. The result was that the data are usually highly dispersed with limited detailed data collations. Such data are held by many organisations with various levels of accessibility. For the data that was accessed, it was often difficult to distinguish illegal impacts from general impacts and it can be difficult to link impact information to data of criminal activity. In no case is there a comprehensive assessment of all of the impacts of one type of environmental crime. As a result it is not possible to provide a robust total figure of the overall impacts of environmental crime. There are too many gaps for this to be done with any confidence. EFFACE, therefore, undertook more detailed analysis to examine the quantitative and economic impacts of five types of environmental crime as it was found that they represented different types of crime with reasonable sources of data on impacts:

- The impacts of arson events[1]
- The impacts of Illegal wildlife trade in rhino and elephant[2]
- The impacts of marine pollution[3]
- The impacts of illegal WEEE shipments from the EU to China[4]
- The impacts of illegal wildlife trade in Horsfieldii Tortoise[5]

[1] Di Fonzo M., P.M. Falcone, A.R. Germani, C. Imbriani, P. Morone, F. Reganati (2015). *The Quantitative and Monetary Impacts of Forest Fire Crimes*. Report compiled as part of the EFFACE project, University of Rome "La Sapienza". All studies are available from www.efface.eu.

[2] Smith, L. and Lucas P. (2015). The Costs of Illegal Wildlife Trade: Elephant and Rhino. A study compiled as part of the EFFACE project. Ecologic Institute: Berlin, Germany".

[3] Philipsen, N.J. and Rigamonti, A. (2015), Marine Pollution. Study in the framework of the research project".

[4] Geeraerts, K., Mutafoglu, K. and Illes, A. (2015). Illegal e-waste shipments from the EU to China. Quantitative and monetary analysis of illegal shipments and its environmental, social and economic impacts economic impacts. A study compiled as part of the EFFACE project. Berlin: Ecologic Institute.

[5] Smith, Lucy Olivia and Lucas Porsch. (2015) Evaluation of the Costs and Impacts of Environmental Crime: CITES trade of the Horsfieldii Tortoise. This study was completed as part of the EFFACE project. Ecologic Institute, Berlin Germany.

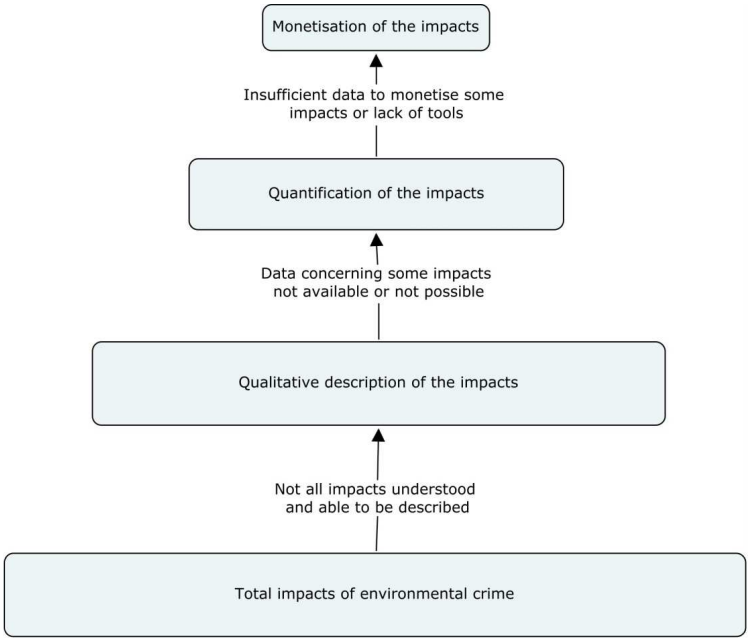
A common framework was followed, which involved the quantitative assessment of levels of illegal activity, the quantitative assessment of the impacts of that illegal activity and the economic impacts of the illegal activity. This brief explores the way that impacts of environmental crime can be measured, including for policy makers, using examples from the EFFACE research for illustration.

IMPACTS OF ENVIRONMENTAL CRIME AS A HIERARCHY

Environmental crime has many different impacts and there are different degrees to which impacts can be described and analysed and different ways in which they can be presented. This is illustrated by Figure 1. An environmental crime (individual or collective) has a range of different impacts. These are understood to different extents and it is likely that some will not be known. Therefore, only a proportion of the impacts can be described in a qualitative way. Of those impacts for which qualitative descriptions are possible, only a sub-set can be quantified. For the others there may be insufficient information (e.g. because of lack of monitoring, difficulty in collecting data in a criminal environment, problems in linking cause and effect, etc.) to provide numbers on impacts. Finally, only a sub-set of the quantified impacts is able to be monetised, (with the damage for example being expressed in EUR), again due to data limitations as well as possible methodological limitations for specific types of impacts.

For environmental crime, there is an additional layer to the pyramid illustrated in the Figure below – where total impacts are included, whether legal or illegal. For some areas distinguishing between legal and illegal activities is not an issue, because an activity is illegal outright (e.g. elephant poaching, or fires where causes are recorded). For some other areas such as marine activities, identifying the illegal component may be problematic (e.g. both legal and illegal fishing may impact on the same fish stock). While research focuses on those impacts which can be quantified and/or monetised, it is important that all impacts, even if they can only be qualitatively described, should be communicated to the public. Only in this way can a full picture be presented. Quantification is important, e.g. to communicate the scale of impact, and monetisation enables the impacts to be considered within wider economic contexts. However, the biggest impacts might be the ones that have not been or cannot be quantified or monetised.

Figure 1. A schematic overview of understanding impacts as a pyramid



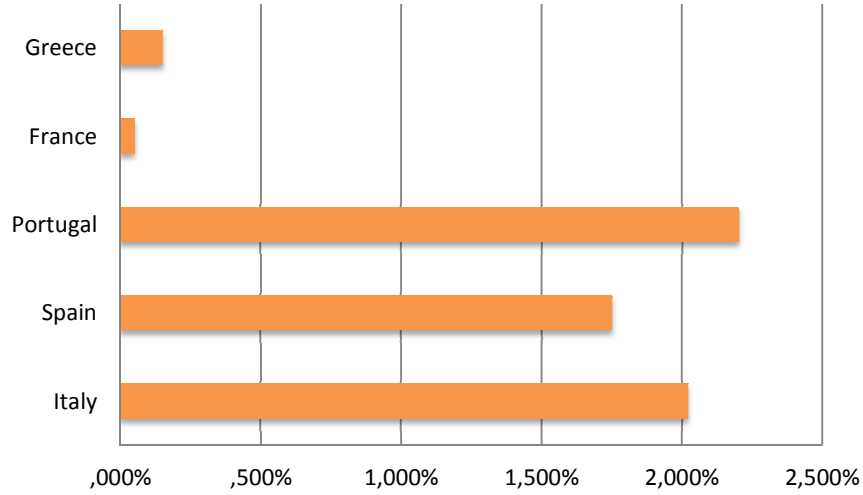
THE IMPACTS OF ENVIRONMENTAL CRIME

The work within EFFACE has examined the impacts of environmental crime for different types of crime and for different types of victims. This brief provides examples of the impacts identified for three types of crime studied as they illustrate the variety of impacts and how they can be quantified.

Arson events

The extent of environmental, social, and economic impacts of arsons depends on several factors such as the size, intensity, location and cause (deliberate and negligence) of the event. Figure 2 shows how much of five EU Member States' total surface has been burnt due to arsons during the last decade. Overall, Portugal has been the most affected country considering the ratio (2.02%) between burnt area (201,210.9 ha) and total surface area (9,209,000 ha), followed by Italy (2.02%), Spain (1.75%) and, to a lesser extent, by Greece (0.15%) and France (0.05%).

Figure 2. The extent of burning due to fire events by Member State, 2003-2012



	Italy	Spain	Portugal	France	Greece
Burnt Area/Total Surface	2,020%	1,750%	2,200%	,050%	,150%

The impact of fires, beyond that of areas burnt, depends in part on the damage caused and related economic impacts, which are addressed further below. There may also be important biodiversity impacts through destruction of habitat, although this is highly dependent on the particular areas burnt and so is difficult to extrapolate from generalised fire statistics.

Illegal poaching of elephant and rhino

The study of illegal poaching of elephant and rhino was able to use good data from CITES monitoring and a number of other specialist monitoring studies. The findings for elephants are that Central Africa lost a total of 100,000 individuals to poaching between 2010-2012. However, the trends vary from region to region. For rhino, the data for four countries show a wide difference with most poached from South Africa, for example, but very few from Namibia.

In some cases of poaching, the levels of loss of individuals have become unsustainable for maintaining the current population, meaning that overall numbers start to decline annually. For elephants, in 2012, the killing rate was 7.4% for the entire African continent compared to an average annual population growth for elephants of 5% (in the absence of illegal killing), which means that more animals are being killed than are being born. Thus, the criminal activity is reducing elephant populations. For rhino, from 1990 to 2007 poaching was limited with an average of only 15 rhino illegally poached per year, which led to an incline and short-lived recovery of the

population. However, illegal poaching set off in 2006 to 60 individuals increasing to 262 in 2008, 426 in 2010, 745 in 2012 and 1215 in 2014. The total population of white and black rhino in Africa increased by 17.5% between 2007 and 2012 with an average rate of population growth of 4.9% annually. This growth rate decreased from 2010 to 2012 to 0.9% annually. Thus, poaching is not yet reducing total rhino populations, but reducing substantially any population growth.

Illegal shipment of electronic waste (e-waste) to China

Quantifying the illegal export of e-waste from the EU (to China) is especially challenging as there is very little clear information upon which estimates can be based. There are data on the amounts of e-waste generated in the EU and on the amounts imported into China and also estimates of overall illegal e-waste exported from the EU. Overall, for 2005 and 2012 respectively, around 0.74 and 1.16 million tonnes of e-waste were imported into China from the EU. The data also suggest an increase over time; this would reflect huge increases in available waste in recent years in the EU (thus reflecting increased opportunity). However, the study found difficulties in determining variability across the EU Member States. As much e-waste is moved within the EU to major ports before shipment, determining particular sources and destinations is very difficult.

The illegal export of e-waste from the EU to China has resulted in the release of large amounts of contaminants in the local environment in China. It has caused high concentrations of heavy metals such as lead, cadmium, mercury, copper and zinc in the surrounding air, dust, soils, sediments and plants. The potential annual emissions of some environmental contaminants were estimated, e.g. it was estimated that 10 and 16 tonnes of toxic polychlorinated biphenyls from EU e-waste were released in the Chinese environment in 2005 and 2012 respectively.

The e-waste study found that illegal exports from the EU have resulted in increasing incidences of chronic disease in China, threatening not just workers but also current residents living within the vicinity of e-waste recycling areas and adjacent regions and future generations. Illegal exports from the EU (through the informal recycling and dumping in China) result in high prevalence of skin, gastric, respiratory, hematic, neurological, prenatal, natal and infant diseases in China. Select scientific studies (in China) show associations between exposure to e-waste and physical health outcomes such as:

- decreased lung function (i.e. lower forced vital capacity);
- decreased physical growth of children (i.e. lower weight, height and body-mass index);
- reduced reproductive health (i.e. increases in spontaneous abortions, stillbirths, and premature births, and reduced birth weights and birth lengths); and
- changes in cellular expression and function (i.e. increased DNA damage).

Negative relationships were also shown for blood lead levels and IQ in children. For China as a whole it is conservatively estimated that around a total of 81,300 children born in the period 1995-2013 have been affected in their neurological development as a result of e-waste exposure. It was subsequently estimated that these children in China lost about 97,560 IQ points as a result of informal e-waste recycling and dumping activities. This amounts to an average reduction of intelligence of 1.2 points per child. Studies of the impacts in these areas of China do not address local biodiversity impacts, if any.

ECONOMIC IMPACTS

Environmental crime has economic impacts. Understanding the nature and extent of economic impacts is very important in helping to inform enforcement activity and in focusing policy development. In determining and understanding the economic impacts of environmental crime, it is important to note the following points:

1. Environmental, health and other impacts (e.g. elephants killed or cancers caused) can be analysed and their monetary value determined through various monetisation techniques.
2. There may also be direct financial impacts of crime (e.g. loss of income to legitimate

businesses), which can be determined.

In this brief we consider both the economic impacts and direct financial impacts to be "economic impacts".

In undertaking an economic analysis of the impacts of crime, it is necessary firstly to have good data on quantitative impacts (e.g. numbers of elephants killed). Without these data, the economic impacts cannot be calculated. Further, for each type of impact there needs to be good methods for monetising those particular impacts. Where an environmental crime might have many impacts (e.g. arson, illegal e-waste), it is likely that good quantitative data are not available for all types of impacts. Therefore, it is possible (or even likely) that an economic analysis of an environmental crime is incomplete. This is critically important to stress as it means that the numbers derived are likely to be underestimates of the total impact of the crime and this is important to recognise in communication to policy makers and to the public.

The different types of data on the economic impacts of environmental crime are illustrated by examples of forest fires, illegal poaching of elephants and on illegal e-waste shipment.

Forest fires due to arson

The monetisation of damages resulting from wildfires has been the subject of extensive analysis by previous research and different methods have been proposed. In the EFFACE research, three different forest fire crimes that occurred in Italy were analysed using three different analytical approaches (analytical, standard costs and forest utility approach) to determine the three key economic components of the damage (i.e. extinction cost, environmental damage, external damage). Table 1 displays a summary of the monetary estimated impact for the Morfasso forest fire, in the Emilia Romagna region: i) the fire extinction costs (or suppression costs) are the costs related to machines and personnel equipment used during the operation of active fire fighting; ii) the environmental damage was evaluated through an analytical approach based on two functions of the forest, namely a) wood production loss and b) decreased hunting activity; iii) the extraordinary external damages take into account only the cost of reconstruction of the destroyed and damaged topsoil. In fact, there are no infrastructures or buildings in the area, nor has damage occurred to people or machinery.

Table 1. Summary of the monetary impacts of the Morfasso forest fire that occurred on July 22nd and 23rd, 2010 analysed using the analytical cost method

Aspect	Value
Costs for fire suppression	€ 100,504.54
Environmental damage (services and goods)	€ 8,012.22
Extraordinary external damage (cost for forest regeneration)	€ 8,572.10
Total monetary impact	**€ 117,088.86**

The second case study (see Table 2) concerns the fire event that occurred in Maracallo, in the Lombardia region, and it employs the approach of standard costs (personnel and related equipment) for the assessment on the extinction costs and the environmental damage; the extraordinary external damages were not considered because the forest fire did not affect physical assets or people's health.

Table 2. Summary of the monetary impacts of the Maracallo forest fire that occurred on April 21st, 2010 analysed using the standard costs method.

Aspect	Value
Costs for fire suppression	€ 21,307.98
Environmental damage (services and goods)	€ 27,143.72
Extraordinary external damage (cost for forest regeneration)	€ 0.00
Total monetary impact	**€ 48,451.71**

Table 3 below summarises the monetary impacts of a third case study, the Rocca Romana forest fire that occurred in the Lazio region, which employs an analytical approach based on the economic assessment of forest fire damage relating to the loss or reduction of the different utility functions (i.e. economic, social and environmental). In particular, the environmental damage rests on the appraisal of seven forest functions: (i) wood production loss; (ii) non-wood production loss; (iii) tourism-recreation loss; (iv) hunting activity loss; (v) soil protection; (vi) protection from climate change; and (vii) biodiversity protection. The total value of environmental damage results from the sum of the aforementioned seven functions.

Table 3. Summary of the monetary impacts of the Rocca Romana forest fire that occurred from August 7th to 10th, 2003 analysed using the forest utility approach.

Aspect	Value
Costs for fire suppression	€ 88,720
Environmental damage (forest functions)	€ 113,633
Extraordinary external damage (cost for forest regeneration)	€ 0.00
Total monetary impact	**€ 202,353**

Illegal poaching of elephant and rhino

The EFFACE analysis of the economic impacts of illegal poaching on elephant and rhino looked at two aspects of income provided by the ecosystem with elephants:

- The societal loss is valued by estimating the alternative legal income that the host society could reap from the animals through tourism income, if they had not been poached.
- If poaching reaches a level that leads to a reduction of the population, the loss is valued as a loss of natural capital. The wildlife is the wealth of the source countries on which basis they can attract wildlife tourism and the associated annual income from it.

The following tables summarise these economic impacts for each type of animal. Overall the poaching of rhinos and elephants causes significant damage to African economies both by taking away current income opportunities for African economies from legal activities, e.g. from ecotourism, but also by reducing the natural capital on which all future income opportunities are based.

Table 4. Economic value lost due to elephant poaching

	Africa
Total population of elephants in Africa 2010	500,000
Number of elephants poached 2010-2012	100,000
Lost potential legal income per elephant	€ 22,331 - €31,264
Total loss of potential legal income 2010-2012	**€ 2.23 billion to € 3.12 billion**
Total loss of population 2010-2012	25,000 (5% of population)
Value of 1% population loss	€ 2.4 billion to € 3.6 billion
Total loss of natural capital 2010-2012	**€ 12 billion to € 18 billion**
Total economic loss per year	**€ 4.7 billion to € 7 billion**

The economic losses caused by rhino poaching are cumulatively less than the losses caused by elephant poaching mainly due to the much higher occurrence of elephant poaching; moreover, except for Zimbabwe, rhino poaching does not yet exceed the natural growth of population.
However, the estimates of economic impacts only cover a small part of the overall societal costs of rhino and elephant poaching as the illegal activity causes other costs which were not able to be valued due to data limitations.

Table 5. Economic value lost due to rhino poaching

	South Africa	Namibia	Kenya	Zimbabwe
Total population of rhinos 2012	20.954	2214 (2010)	914	792
Number of rhinos poached 2006-2014	3.827	5 (2006-2011)	101 (2006-2012)	378 (2006-2012)
Lost potential legal income per rhinos	€ 312,640	€ 312,640	€ 312,640	€ 312,640
Total loss of potential legal income per year	**€133 million**	**€0.26 million**	**€4.5 million**	**€16.9 million**
Total loss of population 2010-2012	0	0	0	67 (8%)
Value of loss of 1% of the population	€ 790 to 1,180 million	€ 37 to 56 million	€ 150 to 230 million	€ 45 to 68 million
Total loss of natural capital 2006-2012	0	0	0	€ 360 to 544 million
Total loss of natural capital per year	**0**	**0**	**0**	**€ 51 to 76 million**
Total economic loss per year	**€ 133 million**	**€ 0.26 million**	**€ 4.5 million**	**€ 68 to 93 million**

Illegal shipment of e-waste

The e-waste study estimated that the 2.98 million tonnes of illegally exported e-waste from the EU in 2012 corresponded to a € 31.2 million to € 37.5 million loss in income to the EU e-waste recycling industry. For e-waste exports to China only (1.16 million tonnes in 2012), the EU recycling industry is estimated to have lost € 12.2 million to € 14.6 million in 2012.

There are also economic impacts via the impacts on jobs. The illegal export of e-waste from the EU in 2012 is estimated to represent a potential loss of about 38,000 full time equivalent (FTE) recycling jobs in the EU. Assuming a typical multiplier of 2, these direct recycling jobs would result in another 38,000 indirect and induced jobs (e.g. those using the recycled materials for manufacturing), for a total of 76,000 jobs. The illegal export to China in particular is estimated to represent a potential loss of about 14,900 FTE jobs in the industry and another 14,900 indirect and induced jobs, giving a total of 29,800 jobs. A loss of 14,900 FTE jobs has an estimated loss of economic value added of around € 780 million. Though this figure needs to be treated with caution due to data availability and quality issues, it is indicative of the significance of losses in economic terms. It should also be noted that the assessment of FTE jobs lost does not mean a total net loss of jobs in society as some people will have alternative jobs available. Table 6 provides an overview of the estimated economic impacts for the EU.

Table 6. Overview of estimated economic impacts in the EU for 2012

Loss in profits for the EU recycling industry	Arising from illegal EU exports to China			€ 12.2m - € 14.6m
	Arising from total illegal EU exports			€ 31.2m - € 37.5m
Lost economic value to the EU	Arising from illegal EU exports to China			€ 348m
	Arising from total illegal EU exports			€ 892m
Potential job loss in the EU (FTE)	Arising from illegal EU exports to China	*Direct jobs*	14,900	29,800
		Indirect and induced jobs	14,900	
	Arising from total illegal EU exports	*Direct jobs*	38,000	76,000
		Indirect and induced jobs	38,000	

Some of the health impacts in China arising from illegal e-waste shipments (and informal recycling and dumping in particular) have direct economic costs and others can be represented by economic or monetary values, which is useful to communicate the importance of preventive and remedial action. A future monetary valuation of the impacts on children's IQ could include an assessment of: opportunity costs in terms of lost productivity (i.e. decreased current value of expected lifetime revenues); direct resource educational costs related with compensatory education; opportunity costs of lost income during remedial compensatory education; medical treatment costs; and, disutility resulting from human development disabilities.

CONCLUSIONS AND POLICY IMPLICATIONS

The research in EFFACE has found that there are good examples of information that can be used to understand the impacts of environmental crime. The most useful are good, coherent databases with information about the scale of illegal events (a fires database being a good example). Another is linking good data from different sources, such as that on illegal elephant and rhino poaching and that on wildlife population changes – thus enabling conclusions to be drawn on whether the criminal activity is affecting populations in the wild. Data from different types of sources can also help paint a picture of different types of impacts (e.g. for illegal waste shipment, economic impacts on health in China and on the recycling industry in the EU can both be assessed).

However, the research also shows that there are problems in attempting to quantify the impacts of environmental crime. These include:

- Barriers to determining what level of crime is occurring, where, trends, etc. In some cases, there is poor recording of criminal activities. Further, in other cases it may be difficult to distinguish between legal and illegal activity.
- Information about impacts may prove difficult to move from the anecdotal to the quantitative.
- Where crime levels are known, the impacts from such crimes may be mixed with those from legal activities, so that distinguishing impacts is difficult.
- There is often poor monitoring and recording of changes to environmental quality, health, etc., so that quantitative impacts of criminal activities are not known even where levels of criminal activity might be relatively well recorded.

The findings on likely underestimates of economic impacts are important when considering the purposes to which such figures could be used in decision making. The impacts can be compared to the financial cost of enforcement effort. Comparative figures can be used to target enforcement action. At a governmental level, economic data demonstrate the political importance of an issue and help in policy development, budgeting, etc. Therefore, good data are important.

The methods available and used for economic analysis vary. In this research, analyses used valuations of the natural environment (e.g. on natural capital loss due to illegal hunting) or to health (e.g. for waste shipment). Research on arson estimated the monetary value of impacts of individual fires using different methods. Several cases have included information on the financial losses and benefits from those engaged in or affected by the illegal activity. In all cases, the economic analysis does not provide a total value for the impact of the type of environmental crime covered, but economic values for specific impacts.

It is important that the EU institutions and MS authorities improve monitoring and collection of data on the impacts of environmental crime, including its economic impacts. Such data are needed for a variety of reasons.

Firstly, environmental enforcement bodies are usually resource constrained and, therefore, it is important that the available resources (even if inadequate) are used most efficiently. One criterion to target those resources is to focus them on where the impacts of environmental crime are greatest or most severe. This might not be the same as numbers/levels of crime, which is also a legitimate criterion for targeting resources. However, understanding impacts and the limitations of such understanding is important in guiding enforcement strategies. Further, if data on impacts can be compared with the results of the application of different enforcement approaches, then such data can be important in guiding the development of enforcement strategies and the development of smart instrument mixes for tackling environmental crime.

Secondly, information on impacts is important for actions to be taken once those impacts have occurred. Where the offender is identifiable, then liability rules may apply and impact data can be used to determine the extent of liability. Such information, therefore, helps to empower victims (where these can be identified as some environmental crime can be viewed as 'victimless') by

providing solid evidence. Information on impacts is also important to guide restoration initiatives, including helping to compare the costs of restoration against the costs of the impacts.

Thirdly, there is a wide range of legislation and policies on environmental crime in different contexts (EU, Member State, international). There is much debate on whether these policies are well designed. However, in order to improve these policies, it is important to have evidence of their effectiveness and their efficiency. Information on impacts is an important part of this evidence (along with other types of evidence). Policies should lead to reductions in impacts and these should, ideally, be focused where those impacts are most severe while taking into account the costs of the policy/enforcement measures. However, is there evidence that this is the case?

It can, therefore, be seen that there are many challenges in gathering qualitative, quantitative and economic data on the impacts of environmental crime. This is due to the wide range of many different types of impacts, the complexity of criminal activity and methodological challenges. However, the gathering of such information is important to help target enforcement activity and improve environmental legislation. Thus further effort is needed to improve the gathering of impact information. This should build on the strengths identified in this research and address the identified limitations. Identifying the strengths, weaknesses, opportunities and threats regarding data and information is undertaken in later work within the EFFACE project, which will lead to identification of specific policy recommendations on this issue and will be the subject of a further policy brief.

RESEARCH PARAMETERS

The research project “European Union Action to Fight Environmental Crime” (EFFACE) is aimed at providing policy recommendations to the EU on how to better fight environmental crime. Drawing on a combination of quantitative and qualitative approaches of different types of environmental crime and engaging in interdisciplinary research, EFFACE will provide the following:

- an assessment of the main costs, impacts and causes of environmental crime in the EU, including those linked to the EU, but occurring outside its territory;
- an analysis of the status quo in terms of existing instruments, actors and institutions;
- a number of case studies on various types of environmental crime of relevance to the EU; and
- an analysis of the strengths, weaknesses, threats and opportunities (SWOT) associated with the EU’s current efforts to combat environmental crime.

These research efforts will feed into overall policy recommendations. Stakeholder involvement in EFFACE promotes mutual learning with and among a broad range of stakeholders.

PROJECT IDENTITY

PROJECT NAME	European Union Action to Fight Environmental Crime (EFFACE)
COORDINATOR	Scientific coordinator: Christoph Stefes, Senior Fellow, Ecologic Institute, Berlin, Germany General coordinator: Christiane Gerstetter, Senior Fellow, Ecologic Institute, Berlin, Germany, envcrime@ecologic.eu
CONSORTIUM	Chatham House – London, United Kingdom Ecologic Institute – Berlin, Germany Institute for Environmental Security – IES – The Hague, The Netherlands Institute for European Environmental Policy – IEEP – London, United Kingdom Maastricht University – UM – Maastricht, The Netherlands "Sapienza" University of Rome – Rome, Italy School of Law, Queen Mary, University of London – London, United Kingdom University of Catania – Catania, Italy University of Granada – Granada, Spain University of Oslo – Oslo, Norway University of South Wales – South Wales, United Kingdom
FUNDING SCHEME	FP7 Framework Programme for Research of the European Union – Collaborative project, SSH.2012.2.2-3, New types of offence in a globalised world: the case of environmental crime
DURATION	December 2012 – March 2016 (40 months)
BUDGET	EU contribution: EUR 2,318,600
WEBSITE	http://www.efface.eu
FOR MORE INFORMATION	Contact: Christiane Gerstetter, envcrime@ecologic.eu Follow us on twitter: https://twitter.com/EnvCrime Subscribe to our newsletter: http://efface.eu/newsletter Join our LinkedIn Forum: http://efface.eu/interactive-tools-forum-workshops-contact-group
FURTHER INFORMATION	The work within EFFACE on quantified and economic impacts of environmental crime is published in the form of several reports. These are all available at http://efface.eu/quantitative-analysis-environmental-crime "European Union Action to Fight Environmental Crime" (EFFACE) is a 40-months research project involving eleven European research institutions and think tanks. EFFACE assesses the impacts of environmental crime as well as effective and feasible policy options for combating it from an interdisciplinary perspective, with a focus on the EU. Project results include several case studies on the causes, actors and victims of different types of environmental crime as well as policy options and recommendations.
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