THE BLACK BOOK OF BIOENERGY

GOOD INTENTIONS GONE BAD

8 CASES FROM AROUND THE WORLD THAT UNMASK THE CULPRITS BEHIND THE CARBON CON OF BIOENERGY!

INTRODUCTION

European climate and energy policies have been built on the myth that bioenergy – being a 'renewable resource' – is all good. Good for the climate and good for the environment. However, as the saying goes 'All that glitters is not gold' and, similarly, all that is renewable is not sustainable. Bioenergy is not the clean dream we all hoped it would be: in some cases, it actually results in an increase in CO_2 emissions (at times even exceeding fossil fuel use) and in numerous instances it threatens biodiversity by putting additional pressure on already over-burdened agricultural land and forests.

Yet, bioenergy continues to make up the vast majority (65%) of the EU's renewable energy mix – and its use is expected to double by the end of the decade! This growth is driven by the EU's renewable energy targets along with so-called green government incentives and subsidies that have been systematically set without adequate safeguards or analysis of actual impacts.

Not all bioenergy is bad – good bioenergy exists. The best potential for sustainable bioenergy lies in different kinds of biomass residues and wastes that do not have other existing uses. The parts of crops left behind on the field after harvesting, manure or by-products from forest industries such as bark or sawdust – all these types of biomass are suitable for bioenergy. After all, 'waste not; want not'. Unfortunately, it is a sad – yet undeniable – fact that there is far less scope for utilising bioenergy sustainably than was initially hoped.

As demand for bioenergy grows (pushed by policy-driven subsidies), the bioenergy industry is increasingly using problematic and harmful sources – and in greater quantities.

A prime example of this is the use of agricultural land for energy rather than food production. This, alarmingly, is the case for most biofuels and biogas in Europe. It drives the expansion of agricultural land use and leads to deforestation, habitat loss and an increase in carbon emissions. Similarly problematic is the use of whole trees for energy – the spike in demand for wood and forest harvests that this triggers not only leads to the wasteful use of good wood, it also diminishes the critical carbon storage capacity provided by forests. To fight climate change, we need to maximize natural carbon stores rather than deplete them.

Many still refuse to believe that current energy policies are driving the excessive use of crops and trees for bioenergy. However, there is ample evidence that this is an area where 'good intentions' have 'gone bad'. While some may already be familiar with the news-grabbing stories from Indonesia (clearing of tropical forests for palm oil plantations) or the USA (forest devastation in the Southern states for the lucrative pellet industry), most people will be astonished to hear that similar scenarios are playing out right here in Europe – from the forests of Eastern Slovakia to the shores of the Canary Islands.

The Black Book of Bioenergy puts the spotlight on 8 cases that unmask the culprits behind the great carbon con of bioenergy. These cases – all of which take place in Europe or are closely linked to European commercial and domestic consumers – are not isolated examples of unusual bad practices. Extensive on-the-ground investigations and background research into an array of local and international sources have shown that these cases are indicative of widespread 'bad bioenergy'.

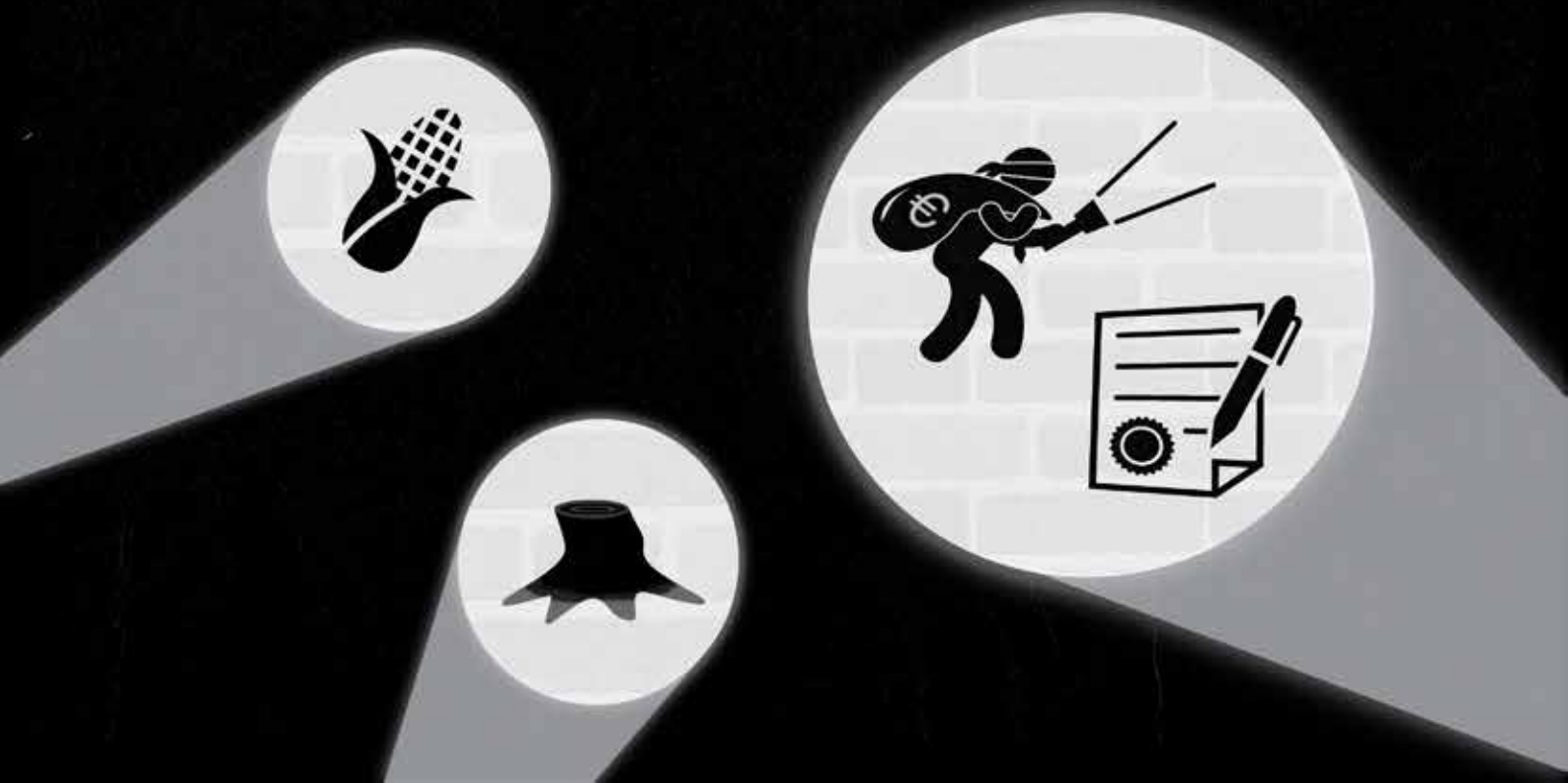
While the stories in this Black Book are murky indeed, they are told in the spirit of hope. We are now at a crossroads – if the EU commits itself to an upfront and honest assessment of the impacts of bioenergy, if it ensures that its climate and energy policies are 'green' rather than 'green-washed', then the next chapter of the European energy story will be a far brighter and more sustainable one.

THE BIOENERGY BAROMETER

WHAT PUTS PRESSURE ON OUR PLANET'S FUTURE?

THE BLACK BOOK OF BIOENERGY

THE CASE STUDIES



CASE #1

SLOVAKIA

1.3 million tonne increase in wood burning for bioenergy since 2005...

...including wood from protected forests in Eastern Slovakia.

CASE NOTES: Bioenergy is Slovakia's biggest source of renewable energy. The growth in bioenergy use is driven by the country's 14% renewable energy target for 2020 and is supported by policy incentives, such as a guaranteed price for electricity for energy producers and support from EU funds for forestry. Hence, the use of wood for energy has grown by 72% in the past 9 years. In most cases, this is for bigger industrial level energy production. Particularly, in the Prešovský and Košický regions of Eastern Slovakia, consumption of wood for

energy already exceeds what could be supplied from more sustainable sources, such as waste wood from industrial processes or landscape management. As a result, more and more whole trees are being used for energy, even from protected areas such as Poloniny National Park. The negative impacts of such logging on local forests have been well documented and monitored by the Slovak NGO WOLF.

CASE #2

ITALY

In Emilia Romagna, Italy, bioenergy companies have started harvesting from rich riverside forests.

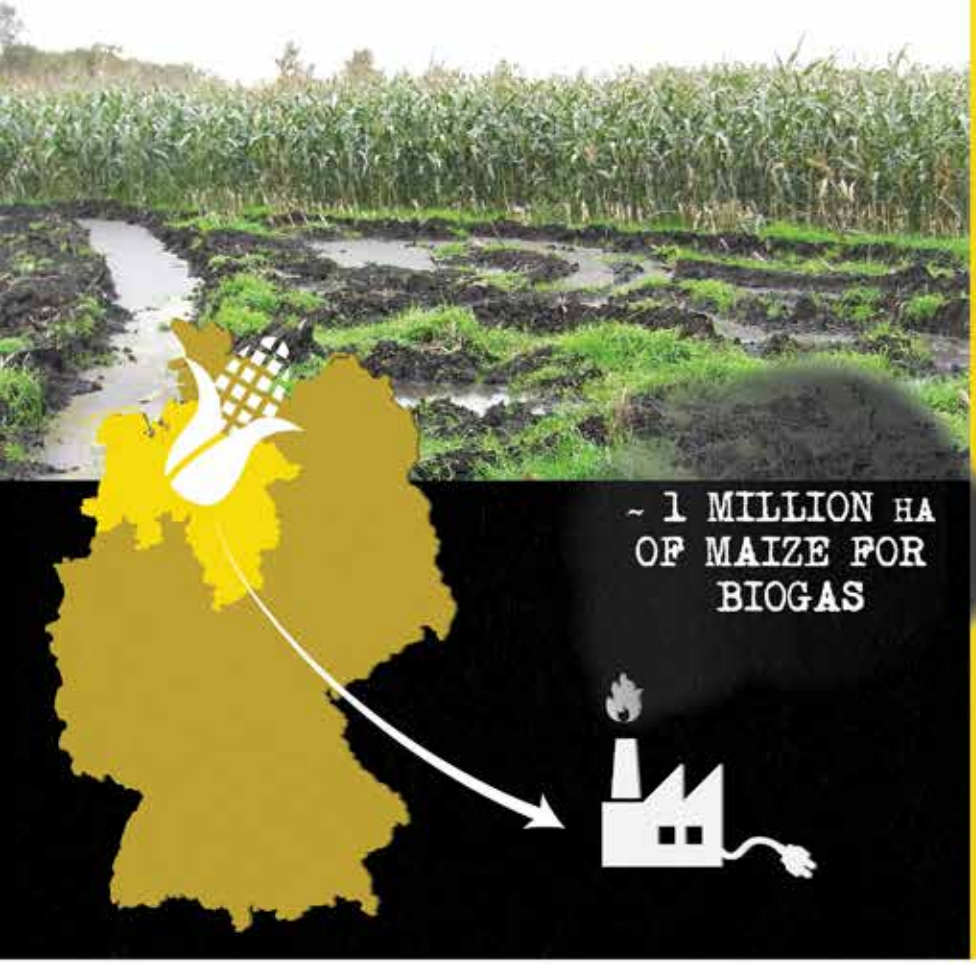
They received authorization from local authorities by falsely presenting their harvesting as 'flood-risk mitigation'.

CASE NOTES: In Northern Italy, the demand for bioenergy has led to the harvesting of riverside forests (many publicly owned) that had, until now, escaped industry interest. By falsely presenting their activities as 'flood mitigation' measures, bioenergy companies have been given permission by local authorities in Emilia Romagna to decimate important riparian (adjacent to rivers and streams) vegetation - and often without paying the usual fees. In actual fact, the recent increase in damaging floods is due to a combination of climate change,

continued gravel extraction and loss of rivers to urban sprawl. The Italian environmental NGO LIPU has documented the harvesting of riparian vegetation along several rivers in the region - adding up to around 200 km of pillaged riverside. LIPU has also recorded systemic infringements of basic environmental legislation and has observed that such bad practices are widespread throughout Italy.

CASE #3

GERMANY



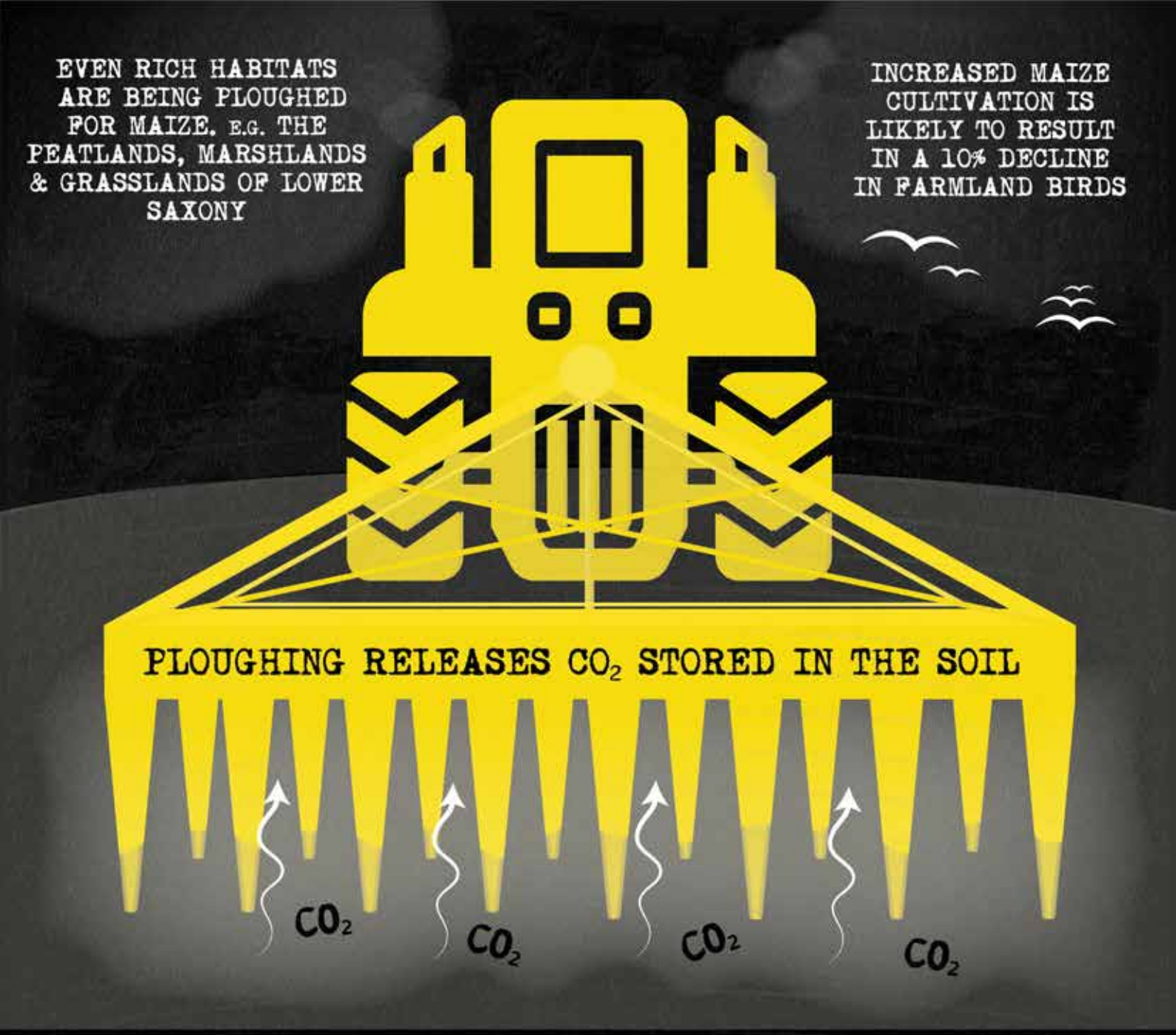
Germany leads the biogas industry, with more than 60% of all European biogas plants.

½ of the resources used for biogas production are food crops, e.g. maize.

CASE NOTES: Around half of the feedstocks used in Europe for biogas are food crops (mostly maize), rather than manure or waste. While the negative impacts of using cropland and food for biofuels have been widely recognized, the same cannot be said for using these same resources for biogas (heat and electricity). In Germany, biogas production has intensified in the region of Lower Saxony, in particular, where maize takes up 65 - 75% of the arable land. The amount of maize now used for biogas has resulted in the region needing to import maize.

EVEN RICH HABITATS ARE BEING PLOUGHED FOR MAIZE. E.G. THE PEATLANDS, MARSHLANDS & GRASSLANDS OF LOWER SAXONY

INCREASED MAIZE CULTIVATION IS LIKELY TO RESULT IN A 10% DECLINE IN FARMLAND BIRDS



IMPACTS

MAIZE CULTIVATION ON PEATLANDS & GRASSLANDS = BIODIVERSITY LOSS

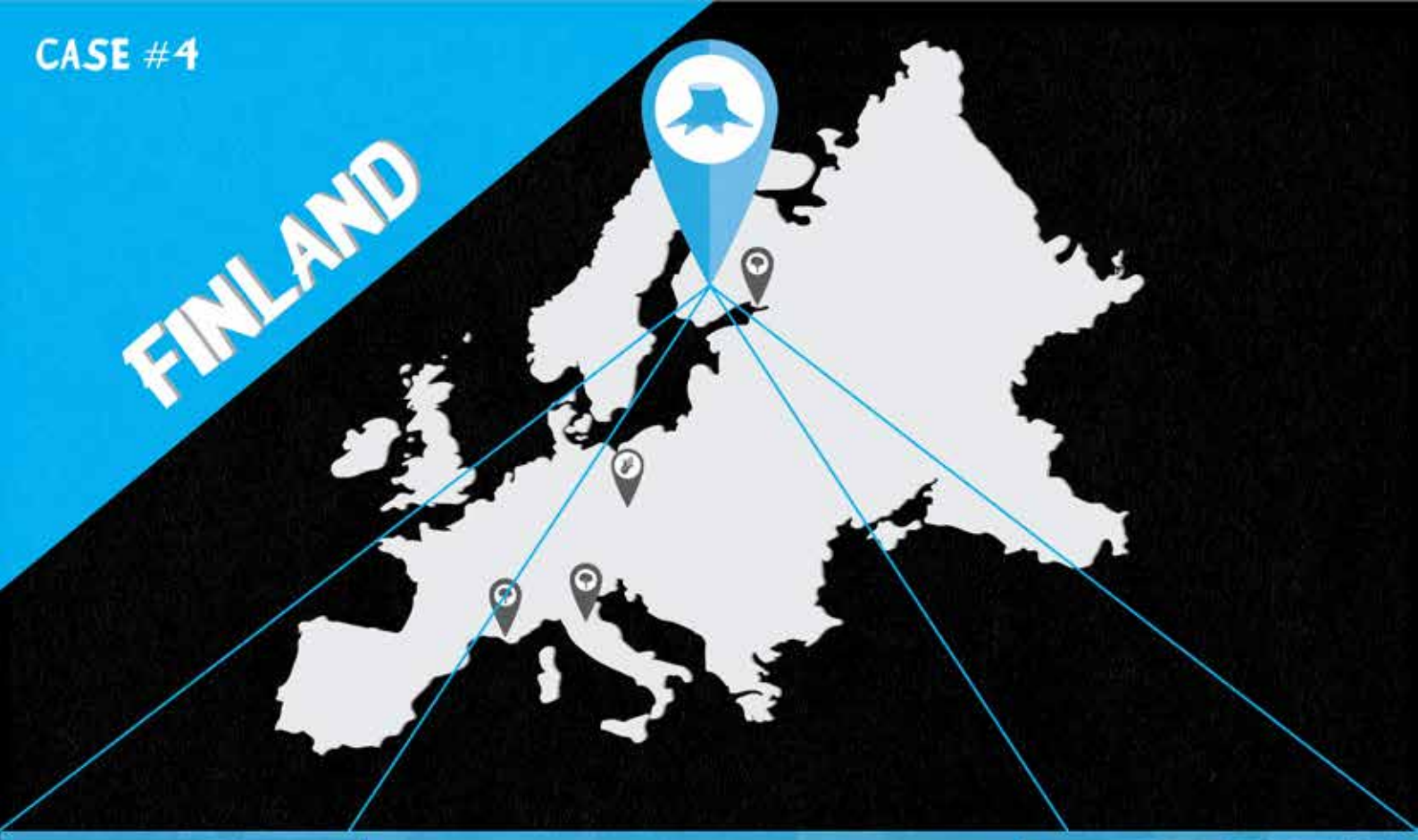
MAIZE MONOCULTURE = UNSUSTAINABLE AGRICULTURE

EXPANSION OF CROPLAND = LOSS OF CO_2 STORAGE

Lower Saxony is also rich in peatlands, marshlands and high nature value grasslands – their already threatened status has been further exacerbated by bioenergy demand. For many years, the German renewable energy law (EEG) has been promoting biogas production. The legislation changed in 2014 so that some of the harmful elements were removed. Nevertheless, thousands of biogas plants still rely on maize and the German example is still being followed by other countries.

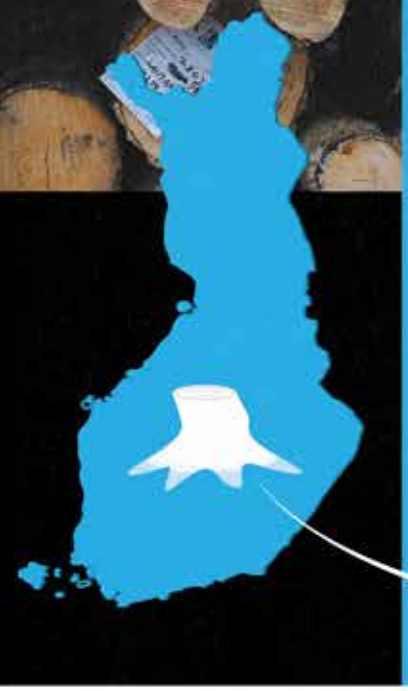
CASE #4

FINLAND



Due to the growing trend towards unsustainable sources for bioenergy (e.g. stumps, deadwood, whole trees) instead of waste residues from forest industry...

...the bioenergy industry is stripping Finland's iconic forest landscape down to the very last stump.

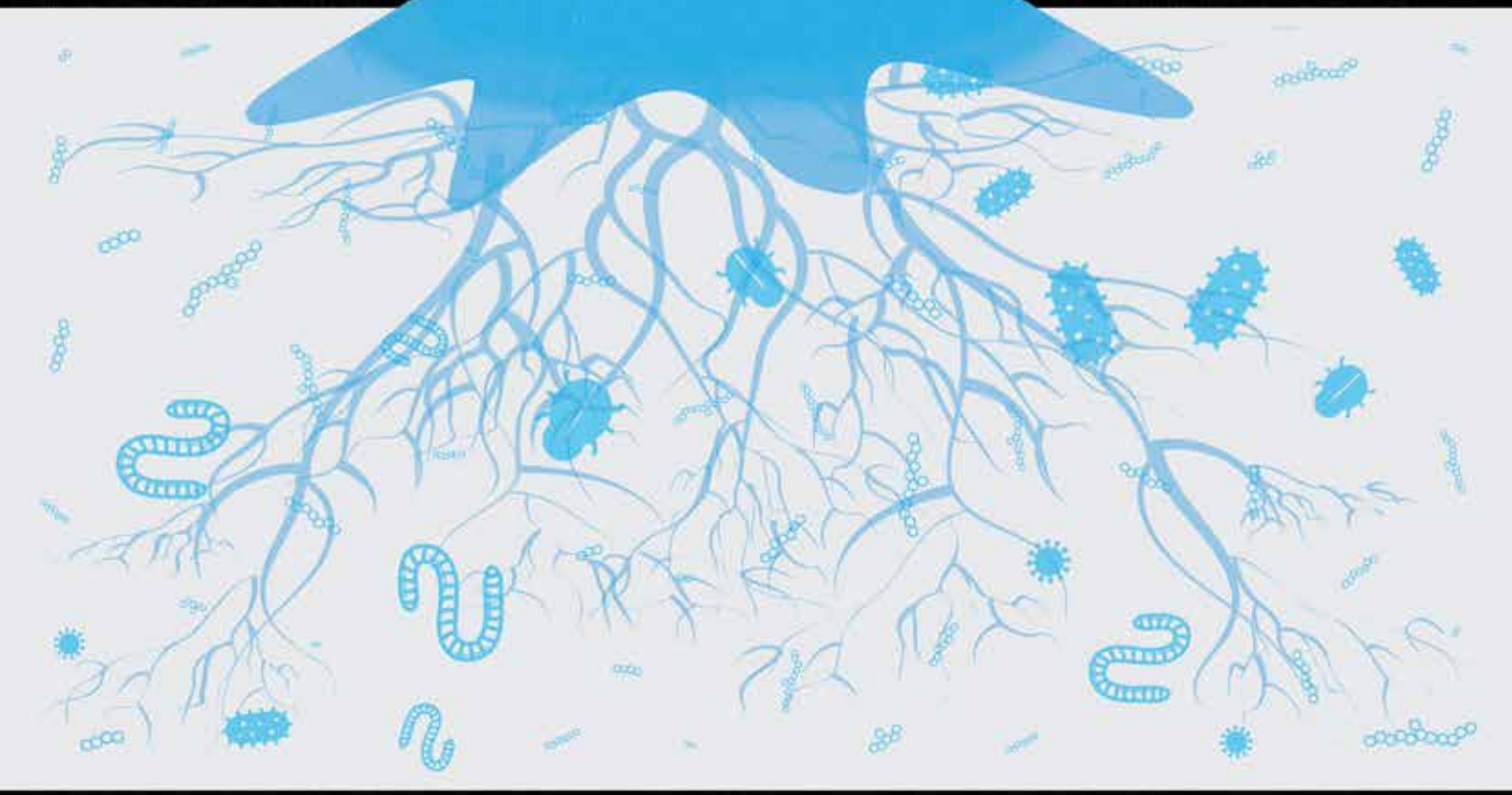


USE OF WHOLE TREES FOR BIOENERGY HAS INCREASED 10 FOLD SINCE 2000

CASE NOTES: Finland has traditionally used by-products from its forest industries (e.g. bark, sawdust and black liquor) for energy. However, the growing demand for bioenergy is pushing Finland to use problematic sources such as timber, stumps and deadwood. Stump extraction has negative impacts on soil fauna, fertility and waterways due to nutrient and hummus run-off. The use of small diameter trees often competes with the paper and pulp industry, leading to additional loggings and thinnings. Even the use of trees deemed to be of 'lower quality' by

LACK OF DEADWOOD IS #1 THREAT TO FOREST SPECIES IN FINLAND

STUMP EXTRACTION FOR BIOENERGY HAS INCREASED FROM 0 TO 1 MILLION m^3 IN 10 YEARS



IMPACTS

LOSS OF DEADWOOD AND COMMERCIALLY LESS VALUABLE TREES
=
BIODIVERSITY LOSS

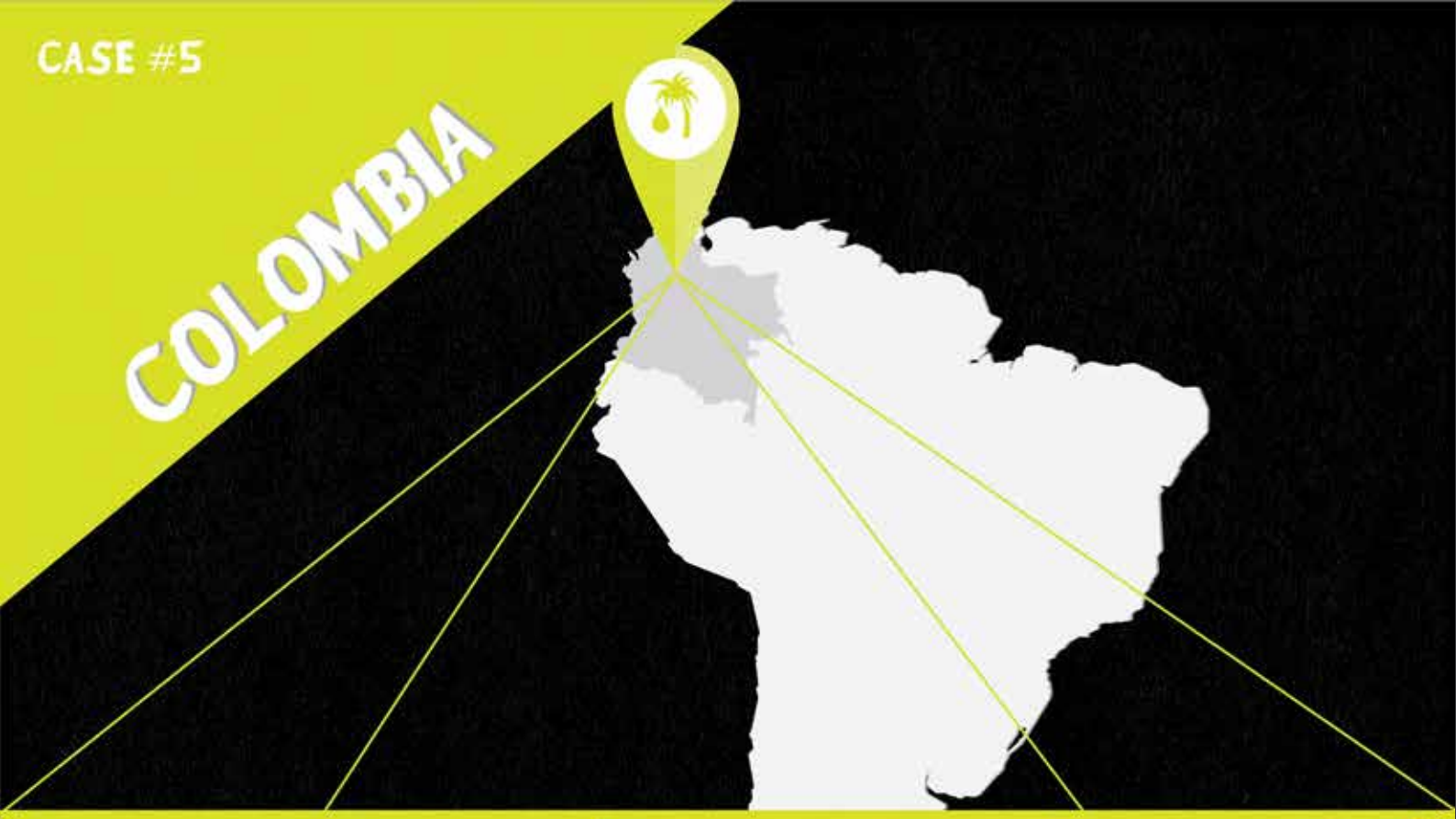
GROWING USE OF ROUNDWOOD FOR ENERGY
=
CLIMATE IMPACTS

SOIL DISTURBANCE
=
NEGATIVE ENVIRONMENTAL IMPACTS

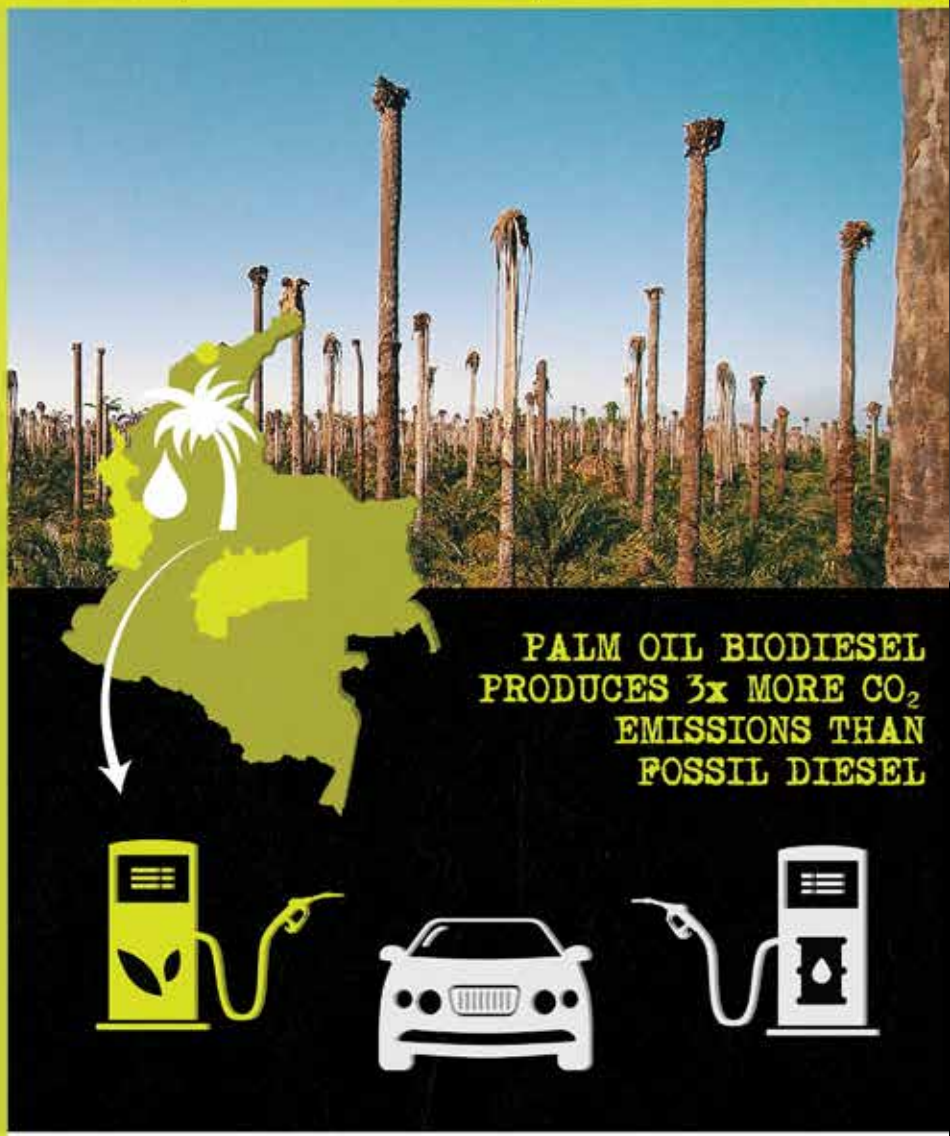
the forest industry can have negative impacts for forest biodiversity. According to official forest management recommendations, the amount of deadwood and broadleaf tree species in forests should be increased to support biodiversity. However, these too are now increasingly harvested for energy. To make matters worse, under Northern conditions, it takes several decades for the climate impact of whole tree trunks and stumps to fall below those of fossil fuels, let alone reach 'carbon neutrality'.

CASE #5

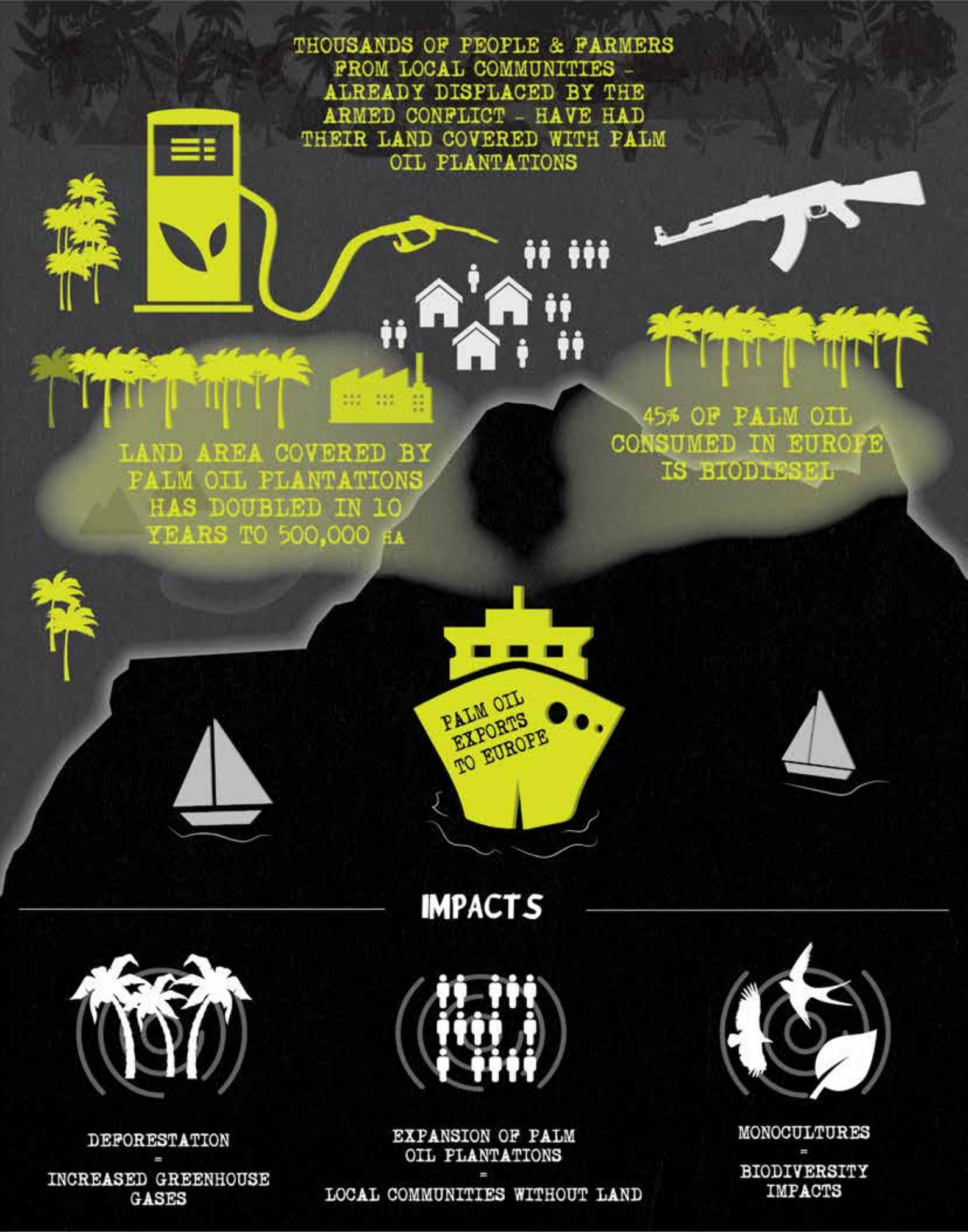
COLOMBIA



Colombia - the world's 4th biggest producer of palm oil - has now joined the rush to supply European biodiesel markets. This is the worst type of biofuel in terms of climate change. EU limits on these 'bad' biofuels are still too weak to stop the expansion of palm oil plantations.



CASE NOTES: Colombia is already the world's 4th largest producer of palm oil and its exports to Europe have tripled between 2013 and 2015, the Netherlands, Germany and Spain being the main destinations. As a result, palm oil plantations in Colombia have doubled in the last 10 years and now span over half a million hectares. This rapid expansion has come at great expense for both people and nature. Forests (including areas of tropical rainforest) and agricultural land - important to local communities already torn apart by war - have been



cleared and handed over to big agro-businesses. From a climate perspective, palm oil biodiesel is the worst kind of biofuel - when you factor in the deforestation it necessitates, palm oil biofuel produces 3 times more emissions than fossil diesel. Even though EU policies have put a limit on these kinds of biofuels (at least until 2020), these restrictions have been too weak to prevent the increase of palm oil imports for biodiesel into Europe.

CASE #6

FRANCE

The German energy giant Uniper is converting part of an old coal burning power plant in Gardanne (south of France) to burn wood for electricity. It will burn 850,000 tonnes of wood each year, of which over ½ would initially need to be imported.

CASE NOTES: Under pressure to phase out fossil fuels from its old 868 MW coal power plant in Gardanne, Uniper (a spin-off company for E.ON's conventional energy business) is finalizing a partial conversion of the plant (250 MW) from coal to wood. The conversion has been motivated by renewable energy subsidies that fix a guaranteed price for electricity - worth €70 million annually for the next 20 years. Uniper will need to source wood from protected Natura 2000 areas and from uplands in the region that help to prevent erosion and

IMPACTS

INCREASED LOGGING
=
BIODIVERSITY LOSS

INCREASED DEMAND FOR WOOD
=
OVER-CONSUMPTION OF NATURAL RESOURCES

EXHAUSTING LOCAL RESOURCES
=
IMPORTS OF RAW MATERIALS

flooding, increasing competition for wood locally. Over half of the wood required by the plant will initially be imported from areas further afield. However, Uniper intends to increase local sourcing which would further increase the negative impacts on the region's forests. There has been public outcry against the plans locally - already, three natural parks and 12 regional federations (representing over 400 local councils) have officially condemned the power plant.

CASE #7

SPAIN

The Spanish bioenergy company ENCE announced plans to build a 70 MW power plant on Gran Canaria, requiring 560,000 tonnes of wood chips annually.

However locally sourced forest residues would only cover up to 20% of the resources demanded.

REQUIRES 15,000 HA OF FOREST PLANTATIONS

CAPACITY TO BURN 560,000 TONNES OF WOOD PER YEAR

½ OF ALL AGRICULTURAL LAND IN THE CANARIES

CASE NOTES: The European biomass craze is even stretching out to the Canary Islands - a small archipelago with limited areas of forested or agricultural land that already imports 90% of its food. Still, the Spanish company ENCE Energia & Celulosa - after winning a bid for renewable energy support from the local government - had plans to build a large scale biomass electricity plant next to the capital of Gran Canaria. The amount of wood that the proposed plant would have required greatly exceeds the island's limited resources; the plant

IMPACTS

INCREASED BIOMASS DEMAND
=
OVERCONSUMPTION OF NATURAL RESOURCES

INCREASED AIR POLLUTION
=
HEALTH IMPACTS

MORE SUBSIDIES FOR INDUSTRIAL BIOENERGY
=
LESS FUNDING FOR SUSTAINABLE BIOENERGY

would have needed to rely on wood chip imports from other continents and the Spanish mainland. Moreover, the local Health Agency condemned the project on public health grounds as the plant would have produced dangerous air emissions (NOx and particulate matter) in excess of recommended limits. Following this criticism, the President of the Regional Government stated that the project should not go forward. ENCE has officially withdrawn this proposal, but says it may have other plans, so the case remains open...

CASE #8

RUSSIA

8 million tonnes of wood pellets are imported into Europe each year, ~1 million tonnes of which come from Russia. The vast majority of these pellets originate from 1 single factory in Vyborg, North -West Russia.

CASE NOTES: A massive wood pellet mill in North-Western Russia constructed by Vyborgskaya Cellulose has the capacity to produce a million tonnes of wood pellets, which are sold to European markets. The pellets are sold to companies such as StoraEnso, RWE, Vattenfall, Fortum, and Dong Energy, but are also sold for domestic heating. Meanwhile, North-West Russia itself continues to rely on gas for energy. The main source of raw material for the pellets is roundwood and whole trees from the forests of the nearby Leningrad and Pskov oblasts as well

as other regions; enough forest has been leased to provide 1.2 million m^3 of wood every year. The plant has also been caught out for not paying VAT taxes on its pellet exports and many payments to its wood suppliers have been left unpaid. Following bankruptcy, the plant is now controlled by the state and is still running. Despite this, the plant has applied for the Sustainable Biomass Partnership (SBP) and Forest Stewardship Council (FSC) certificates. These certificates are still pending.

BIOENERGY

For too long, the dark side of bioenergy has cast a long shadow over the EU's efforts to tackle climate change and preserve the planet. The EU 2030 Renewable Energy Package is a golden opportunity to put bioenergy back on the right 'sustainable' track. The evidence examined in this Black Book provides a clear and compelling argument for ensuring that future policies distinguish between 'good' and 'bad' sources of bioenergy. In the light of this, the EU needs to follow 6 guiding principles.

RECOMMENDATIONS

1. Adopt an EU-wide limit on the amount of bioenergy used to meet the EU's 2030 Climate & Energy Targets, including a phase-out of biofuels from food and energy crops.

2. Exclude high-risk biomass sources (e.g. biomass from protected areas, stumps, roundwood and crops from agricultural land) unless evidence is provided that this enhances environmental conditions.

3. Limit the extraction of agricultural and forest residues for energy use.

4. Ensure that biomass for energy does not displace other existing uses of the biomass and is in line with the principles of 'cascading use' and the 'waste hierarchy'.

5. Ensure affected communities' prior and informed consent and respect of their human, labour and land rights in the production and use of biomass for energy.

6. Introduce a minimum efficiency threshold for energy installations and fuel manufacturers producing bioenergy or biofuels.

...FOR A SUSTAINABLE FUTURE

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Note: The scale of the ongoing LIPU investigation is such that only an indicative overview of key sources can be presented here. For further details please contact info@lipu.it

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