KNOWLEDGE PRODUCT

ORGANISED CRIME & ENERGY SUPPLY

SCENARIOS TO 2020

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1. Introduction

Energy security is now front page news. Increasing concerns about global warming and other environmental threats have brought increased public attention to energy issues in general, while occasional energy shortages in recent winters in certain countries have provided a reminder of just how reliant on identified energy supplies we are.

Around the world and more specifically in the EU, concerns have been raised regarding future energy availability, particularly levels of dependence on hydrocarbon imports (oil and gas). At the same time, strategic intelligence analysis indicates that organised crime groups are involved in energy supply to the EU and within EU Member States (MS).

In the Strategy for Europol 2010-2014, the Organisation has committed itself to "scan the environment for new developments in internal security threats". With this in mind, Europol has carried out a scenario management exercise to examine the possible future involvement of organised crime in energy supply.

Scenarios are descriptions of possible worlds which facilitate reflection on the future. Different scenarios highlight risks and opportunities which enable organisations, including law enforcement agencies, to prepare appropriate responses in the event of identified phenomena becoming a reality. Scenario building is an approach which is increasingly being used by the public and private sector alike.

The scenarios presented in this document will be used to inform strategic decision–making at Europol, supporting the overall approach of forward planning through foresight. It is also anticipated that this document will be of use to the competent authorities in EU Member States. This report is the result of a joint exercise, which has drawn on expertise from Europol, national law enforcement, the private sector, academia and the European Commission.

It should be noted that this document is not a threat assessment and is not intended to provide specific recommendations for operational responses.

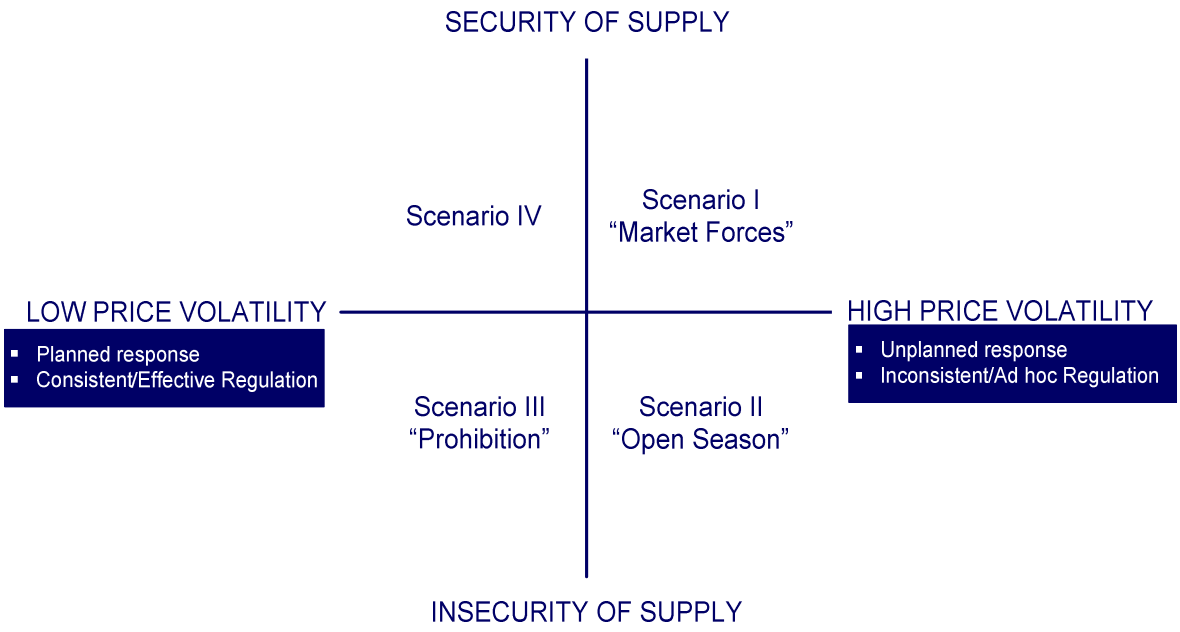
2. Methodology and Approach

A timeframe of ten years has been set for the exercise, with the focus on interaction between Organised Crime and the energy sector in 2020. Narratives have been drafted on the basis of plausible features within this timeframe.

A questionnaire on both the current situation and future developments was sent to selected experts from MS law enforcement, the EU Commission, academia and the private energy sector. Analysis of these enabled the identification of current signals for potential scenarios and helped to structure a subsequent workshop, in which respondents were invited to identify critical uncertainties based on common themes and key factors in the participants' contributions. Since the future is essentially uncertain, consideration of uncertainty is key to scenario building. During the workshop, the following uncertainties were identified as the most critical:

- Geopolitics and security of supply
- Price volatility
- "Respectabilisation" of crime
- Lifestyle change

Security of supply and price volatility are considered to be the two uncertainties with the largest impact on the energy future and the greatest levels of uncertainty, and as such form the axes on which the scenarios are plotted. A high level of price volatility correlates with a world of unplanned responses and inconsistent regulation, while a low level of price volatility correlates with planned responses and more consistent regulation. Organised Crime's drive for respectability and lifestyle change are nevertheless considered to be cross-cutting issues which are key factors in the possible futures described, and therefore serve to flesh out the narratives.



The world described in each scenario springs from the combination of the two critical uncertainties:

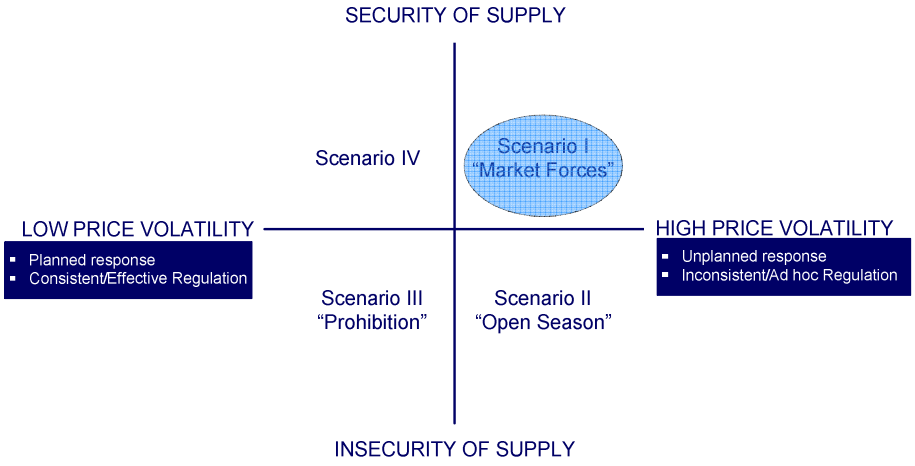
- Scenario I: "Market Forces" - High level of security of supply + high price volatility / low regulation
- Scenario II: "Open Season" - Insecurity of supply + high price volatility / low regulation
- Scenario III: "Prohibition" - Insecurity of supply + low price volatility / high regulation
- Scenario IV: High security of supply + low price volatility / high regulation

This document presents the first three of these on the basis of consideration of their plausibility, impact and opportunities for Organised Crime. Scenario IV remains possible: where energy supply is secure and highly regulated, Organised Crime finds opportunities in, for example, illicit fuel supply which undercuts legitimate pricing by means of regulatory non-compliance, and the exertion of corruptive influence in order to subvert existing restrictions or press for regulation which is more suited to its interests.

The worlds which result from the dynamics between the two critical uncertainties have been elaborated using the PESTELO approach to environmental scanning, which considers in turn political, economic, social, technological, environmental, legislative and organisational aspects. In elaborating all of these aspects, the scenarios not only respond to signals presented by current and developing interactions between Organised Crime and the energy sector, as indicated in the orientation questionnaires, but also draw on an extensive literature review – including academic articles, commercial and official publications, and journalistic reporting - in their consideration of previously unseen phenomena.

3. Scenarios

3.1 Scenario I - "Market Forces" = High Energy Security + High Price Volatility/Low Regulation



In which EU and other Organised Crime (OC) groups see energy as a safe long term investment, play the markets for short-term opportunities, profit from price/tax differences and voluntary changes in consumer lifestyles, and use the energy sector to progress further towards respectability.

Key characteristics:

- **Price volatility leads to economic instability**
- **Globalisation and liberalisation of the EU energy market gather pace**
- **Self-regulation by energy and financial sectors**
- **MS subject to different price and tax levels for energy**
- **Market forces and consumerism as key drivers for energy transition**
- **Emerging tensions between governments and international energy companies**
- **Reactive regulation of investments on the horizon**

Key Organised Crime (OC) opportunities:

- **OC profits from energy speculation – profitable money laundering**
- **Emissions Trade Fraud (ETF) and other emerging markets**
- **Increased infiltration of energy companies by means of investment**
- **Corruption of private sector to maximise short-term investment opportunities**
- **Leading role in investment in renewables, thanks to lower capital costs**

- **Exploitation of price/tax differences by means of liquid fuel smuggling within the EU**
- **OC responds to price volatility with black market in liquid fuels**
- **Demand-driven illicit supply of energy efficient products and components**
- **Other forms of organised criminality are attractive, e.g. cybercrime, illicit supply of electronic items**

This is a world in which energy supply is secured by various means, and an absence of more stringent regulation of the energy and financial sectors affords a continued role for the major commercial suppliers. In the sense that the energy supply arrangement is not sustainable, this world represents an intermediate stage on the road to "Open Season" (Scenario II).

MS engage in a certain amount of cooperation in order to achieve comfortable levels of energy security on the basis of national priorities. The EU loses its vision in as much as it comes to serve national, and even personal, interests: EU policies are somewhat changeable as a result. MS come together to secure energy supply from the most important sources. In cases where supply companies experience high levels of OC infiltration, governments and the EU increasingly rely on "deals with the devil" - e.g. bilateral agreements with partners infiltrated by OC, further legitimising OC interests.

Economy-driven measures

The agreement reached at the 2009 Copenhagen summit on climate change (COP15) is viewed as a bargain based on shifting national priorities. As a result, there is little will at central government level to exceed the minimum expectations set. Measures to reduce emissions are driven by the prospect of profit rather than by climate change concerns: "cap and trade" gains strength because of an already established trade in carbon credits and a market for Carbon Capture and Storage (CCS); in the absence of requisite regulation, this is accompanied by an increase in Emissions Trade Fraud (ETF). Moreover, in light of limited will to drive forward anything but the minimum requirements to tackle climate change, populations outside the EU experiencing the first effects of global warming are on the move. Within the EU, national borders remain open, facilitating migration for employment purposes. Such freedom of movement not only acts as a pull factor for both licit and illegal migration to the EU but, especially in areas of energy development, also begins to create temporary migrant communities (both from MS and outside the EU) which are vulnerable to the influence of OC because of their isolation from mainstream society.

Free market principles preserve a role for international energy companies, and both globalisation and the import/export trade are largely unhindered. The liberalisation of the EU energy market continues apace, and competition results in price reductions for some consumers. Since the EU market remains open both to foreign direct investment and to acquisitions by foreign energy supply companies, OC groups based within and outside the EU have the opportunity to act as shareholders and suppliers respectively. Both eventualities afford OC greater control and influence over the legitimate economy, and opportunities to exercise power in commercial decision making.

Fossil fuel insecurity persists

Outside of the EU, private companies compete with local governments to exploit remaining fossil fuel reserves, including those – such as unconventional gas or shale oil – made profitable or accessible through technological developments. In cases where supply companies experience OC infiltration, this leads to increased OC influence over fossil fuel production. Ultimately, competition for resources leads in some source areas to tension between governments and international energy supply companies, and the re-nationalisation of dwindling fossil fuel reserves. In this event, such actions push the future towards the "Open Season" scenario.

Fuel prices, meanwhile, are still subject to volatility: speculation on energy markets initially goes unchecked, and recession prompted by spikes in liquid fuel prices remains a real possibility. Further OC infiltration of the EU energy sector and the continued practice of speculation conspire to create a situation in which OC has the ability to affect energy prices for its own profit, whilst each economic setback renders legitimate business more vulnerable to compromise. In a similar vein, OC engages in corruption of the private sector to gain privileged information on energy futures and to capitalise on short-term investment opportunities by anticipating price changes. By playing the energy markets, OC groups are also able to engage in potentially profitable money laundering.

Because on the whole EU energy supply is not yet self-sufficient, it remains vulnerable to disruption by non-state actors, with a potential impact on price levels. Whilst disruption can be achieved by means of terrorist activity (e.g. damage to oil pipelines), equally this vulnerability presents OC groups with opportunities to disrupt supply in order to affect price levels, thereby deriving increased profit on investments.

In many ways lessons have not been learnt from the global financial crisis of 2007-9. Amongst private citizens, meanwhile, the fear of recession and financial hardship remains. This

manifests in behaviour such as stockpiling and voluntary, consumer driven transition to energy efficient technologies in the belief that these will reduce individual expenditure. A cycle of "boom and bust" – be this actual or merely perceived – encourages OC groups to hoard liquid fuels and other consumer items for resale in the event that prices rise. At the same time, lack of tax harmonisation results in differences in price for end consumers in MS. OC profits from these discrepancies, smuggling liquid fuel within the EU, from low duty/price to high duty/price areas.

Technology and energy transition

Although renewable energy technology remains expensive, some individuals and local communities choose to meet the initial outlay of small-scale independent generation, on the understanding that it will be more cost effective in the longer term. Likewise, energy efficient technology is embraced because it is money-saving technology. Lithium batteries, for example, are popular because they require less charging, and there is increased uptake of hybrid vehicles in response to rising or unpredictable fuel prices. As energy efficient products become more sought after by consumers, so too is there an upsurge in their illicit and counterfeit supply.

In the absence of enforced limitation on energy consumption and globalisation, however, MS populations remain active consumers of electrical appliances and electronic gadgets. There is a persistent trend for incorporating several different functions and applications in a single appliance, and increasingly efficient infrastructure – e.g. ever faster broadband Internet connections – puts less of a strain on electricity consumption: at a global level, this is counterbalanced by the first-time introduction of such products to the developing world. By the same token, portable electronic items continue to be highly sought after, and illicit supply of these – be they stolen or counterfeit – proves attractive to OC.

In terms of the energy sector's attractions to OC relative to other criminal activities, continued globalisation and free market principles combine to make this world one of persistent expansion of telecommunications and Internet-mediated functions such as online retail and banking. In this environment, Internet-facilitated frauds by means of identity theft and hacking allow OC to derive higher profit and quick gains by less visible – and therefore lower risk – methods than direct involvement in energy-related sectors. Equally, when loss of revenue prompts the adoption of more stringent data security measures by banks, retailers and individual consumers, and more concerted legislative and law enforcement responses, the focus of OC reverts to the assured demand and essential supply of the energy sector.

In a profit- as opposed to policy-driven energy landscape, legitimate investment in large-scale renewable technologies runs into difficulty. The larger energy companies are unable to justify the comparative lack of quick return to their shareholders, leaving those willing to make longer term investments and those with lower capital costs – such as OC – to step in. Beyond 2020, the implications of this are that by default OC will be a leading player in renewable energy supply, on which the EU will become increasingly dependent as remaining fossil fuel reserves dwindle.

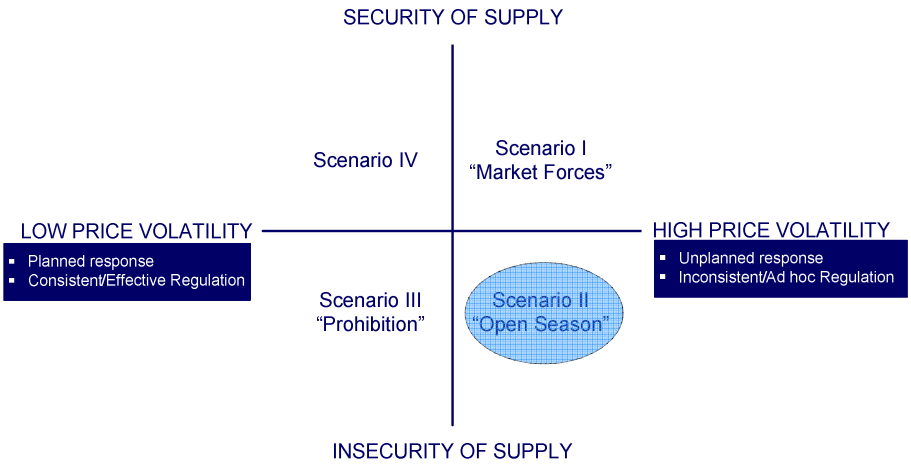
Responses

The dominant legislative feature of this world is an absence of effective regulation of the energy and financial sectors, or more specifically, prevailing self-regulation, a situation reinforced by a comparative lack of law enforcement knowledge of these sectors. Since the geopolitical and economic factors provide fertile ground for OC infiltration of the energy sector, self-regulation serves to facilitate concealment of OC activity.

Eventually, however, a more consistent focus on asset recovery by governments, and the desire of energy companies to know and manage the expectations of their shareholders, lead to the introduction of tighter controls on investments, e.g. to determine the origin of investments in the energy sector, and legislation throughout the EU against money laundering. As prices continue to fluctuate, speculation on energy futures comes under particular scrutiny in an attempt to encourage stability. Additionally, there develops a greater focus on corporate criminal liability, in response to the effects of OC infiltration of energy supply companies. Legislation to protect the environment from damage related to energy production and supply is an afterthought.

Due to a lack of knowledge and experience in the field, law enforcement initially fails to provide effective responses to OC involvement in the energy sector and energy finance, preferring that these industries police themselves. As the amount of lost revenue and the level of OC influence on private companies become apparent, the tendency for transnational OC investigations to follow money trails leads to prioritisation at both national and international levels of financial investigation and money laundering cases, incentivised in some countries by the prospect of additional funding for law enforcement, as provided for in Proceeds of Crime legislation.

3.2 Scenario II - "Open Season" = Low Energy Security + High Price Volatility/Low Regulation



In which prominent and well-funded OC groups enjoy more power and receive more social acceptance as a result of a lack of cooperation between MS, increased competition for vital resources and reduced success in controlling their activities.

Key characteristics:

- **"Carving up" of remaining fossil fuel reserves**
- **Unplanned responses to the problem of energy security**
- **Price fluctuations leading to "boom and bust"**
- **Unregulated investments**
- **Territorialism, and reduced cooperation between EU MS**
- **An increase in migration to and within the EU**
- **Reduced law enforcement capacity**
- **Reactive legislative responses**
- **Increased proximity between private citizens and OC**

Key OC opportunities:

- **Waste disposal (including nuclear), and waste-to-energy (WTE) technology**
- **Use of geopolitical conflict as a cover for trafficking**
- **Public subsidy fraud for renewable technologies**
- **Trafficking in fuels and energy components, exploiting differing taxation levels in MS**
- **Black market and counterfeit supply of fuel and goods**
- **Exploitation of migrant workforces**
- **Profitable money laundering (ML)**
- **Public protection and racketeering**

In a world of low energy security and high price volatility, governments and non-state actors alike compete to secure access to remaining fossil fuel reserves. Absence of a binding agreement on climate change results in poorly coordinated and ad hoc responses to the problem. Outside the EU, populations experiencing the first effects of global warming are on the move, putting added strain on the energy resources of EU MS against a backdrop of increasing scarcity.

A less collaborative environment

In some parts of the developing world, this competitive atmosphere manifests as neo-colonialism: interested parties seek to carve up territory in energy hotspots, which in turn engenders geopolitical instability. Recognising that fuel ownership is power, the best resourced OC groups move to infiltrate and influence both government machinery and large energy companies in source countries, perpetuating the culture of "rent-seeking"[1] already observed in some areas. OC groups from overseas, including those from the EU, profit from opportunities for unregulated investment in these areas.

At the same time, rising prices prompt an increase in oil bunkering, and other fuel thefts in consumer nations such as the laundering of "marked" oil[2]. Meanwhile, suppressed economic growth associated with the "resource curse"[3] acts as a push factor amongst source country populations towards both involvement in criminal activity and migration (both licit and illegal) to countries with better living standards. Prioritisation of energy security in source areas prevents the authorities from responding effectively to other types of criminal activity, abstracting law enforcement resources from policing the trafficking of other illicit commodities, such as drugs, counterfeits and human beings.

Within the EU, increasing energy scarcity, unpredictable price levels and changes of government in some MS weaken the implementation of the Lisbon Treaty and prompt a movement away from planned cooperative responses to ad hoc bilateral agreements. Whilst designed to secure energy supply for individual countries, unless complemented by supply diversification these in fact result in new inter-dependencies, and a shift in the balance of power towards those countries within and outside the EU on which the MS depend, and those MS who are self-sufficient, e.g. those with unconventional gas deposits. Moreover, in cases where there is direct OC involvement in the energy sector, this entails MS dependence on OC

[1] "Rent-seeking" denotes behaviour whereby individuals or companies use their resources to effect changes in public policy from which they themselves will derive benefit.
[2] E.g. cheaper diesel dyed red and intended for use only by off-road agricultural vehicles.
[3] "Resource curse thesis" denotes the phenomenon whereby countries with abundant natural resources experience lower economic growth than those with fewer natural resources.

for essential services. Cracks start to show in the EU itself, as new political alliances are formed and old alliances regain their strength on the basis of energy requirements. In such a competitive environment reduced communication between MS and less effective regulation at EU level foster political corruption, thereby providing opportunities for fraud, and the undue influence of OC on decision-making.

National energy transition

Accordingly, and in line with an increasing politicisation of energy, MS turn inwards and work to expand their own energy supply capacities by developing alternative energy sources at a national level and improving energy efficiency in response to uncertainty over its availability – also expanding or renewing development of local fossil fuel reserves which have previously been inaccessible or unprofitable. In some MS this heralds a reversion to nuclear power, in others to solar, wind and hydroelectric generation. Whilst nuclear power generation itself remains under state control, nuclear fuel and components become sought after commodities, and impaired cooperation amongst MS means that those nations embracing nuclear power have to make difficult choices concerning the disposal of nuclear waste. In light of sensitivities over the risks attached to local storage, there are increased opportunities for OC groups experienced in waste disposal: given OC's propensity for non-compliance, this presents obvious risks to public health and safety in both MS and countries outside the EU, especially the developing world. The drive for local energy supply also prompts increased development of waste-to-energy (WTE) technology, doubly attractive in so far as it combines energy production with recycling. Whilst this technology is still in its infancy, OC's historical involvement in waste management means that they are in the vanguard of its introduction.

Renewable technologies remain expensive to develop in the short term, so public subsidies continue to be offered in order to attract investment. These in turn are liable to exploitation by OC, to the detriment of local and national budgets and ultimately, in the event of a failure of these projects to be realised, the end user. Whilst greater focus on renewables and energy efficiency has self-sufficiency as its aim, some dependence on countries with reserves of components and expertise essential to current renewable technology is inevitable: for example, the importance of rare metals to wind power generation and energy efficient battery development, and advances in green energy research and development (R&D) not only find world leaders in East and South East Asia, but also open up these markets to the possibility of illicit trafficking of components and intellectual property (IP) theft.

Profiting from insecurity

High price volatility results in part from a lack of effective regulation. Energy prices – particularly those of liquid fuels – impact on transport costs and, by extension, on the price paid by consumers for basic supplies such as food. Because MS enjoy different levels of economic growth, some are more equipped than others to weather the storm. Higher operating costs mean fewer opportunities for "new" MS growth, which renders legitimate business structures (LBS) vulnerable to investment from OC. At the same time, OC profits from differences in terms of taxation and prices by means of illicit trafficking/smuggling of fuel, food and other essential commodities. Black markets thrive, OC profiting from price volatility by buying low and selling high. Since these markets are entirely unregulated, customers come into contact with dangerous, poor quality and waste-grade commodities.

The inward focus of MS and constraints on long-distance commercial transport encourage local industry and agriculture, including biomass crop cultivation. In so far as this improves energy efficiency and helps to secure the availability of essential items for local populations this is a positive move. However, it also presents new opportunities to legitimate and criminal investors alike. Equally, it acts as a pull factor to migrants from countries outside the EU and, indeed, MS with lower economic growth and living standards. Gangmasters have sizeable irregular workforces at their disposal, and MS become increasingly dependent on OC and irregular labour for the production of both essential and luxury consumer items.

In the absence of EU-wide financial regulation, investment in MS energy sectors by non-EU actors continues apace, with legitimate and criminal investors alike exploiting opportunities presented by regulatory diversity in the EU, facilitating the further infiltration by OC of essential legitimate services. Moreover, a world in which energy is increasingly sought after and subject to fluctuations in price is one in which OC is able – with the requisite knowledge and expertise – to launder money at a profit, thereby generating further funding for criminal activity. Additional opportunities emerge in the form of privatisation of state-controlled services in response to recessions triggered by oil spikes: with comparatively high levels of ready funds, commercial concerns with links to OC are well placed to step into this gap in the market.

Greater public acceptance of criminality

Private citizens subject to higher prices, a lower quality of life and perhaps unemployment come into increasing proximity with OC, through direct involvement in criminal activity, purchasing fuel and other goods from the black market, or indeed looking to OC groups for security. In this society, outages and brown-outs are a reality, and low-level criminals take

advantage of the cover of darkness to engage in looting and robbery. Fear of crime increases, fuelled by feelings of insecurity and isolation, and tensions between resident and migrant communities: national and local law enforcement, meanwhile, are subject to the same cuts in expenditure as other government services and are less able to respond effectively. Street policing is increasingly conducted by private security firms, and OC groups are instrumental in keeping the peace and communities safe. At its worst, this manifests as racketeering, with OC profiting from threats of violence.

Reduced availability of liquid fuel at a stable price combined with technological advances encourages more people to work from home. This has a positive impact on both family life and community spirit, marking a reversal of the trend for commuter towns which are deserted in the day. Overseas tourism is adversely affected by fuel prices. In some MS a surge in local tourism driven by family budgets compensates for this, and opportunities for investment present themselves accordingly: in those MS and non-EU nations with high levels of economic dependency on overseas tourism, numbers of unemployed and deprived citizens swell.

Driven by uncertainty and financial constraints, there is increased interest in small-scale power generation by individuals and local communities. Since in the short-term this technology remains expensive there is a corresponding increase in the theft and resale of generators and components: at the same time, OC steps in to provide power facilities where local funds are lacking. As individuals seek to become more self-sufficient, MS also begin to see an increase in organised wood theft and resale, with a corresponding impact on local environments as a result of both deforestation and higher levels of emissions from wood burning.

In an effort to save money the public also embraces energy efficiency. There is a captive market not only for stolen, but also counterfeit or "duty free" versions of, goods such as lithium batteries, energy efficient light bulbs, and electrical appliances with low energy ratings. This buoyant illicit trade has a negative impact on the legitimate trade in such products, further restricting economic growth in MS.

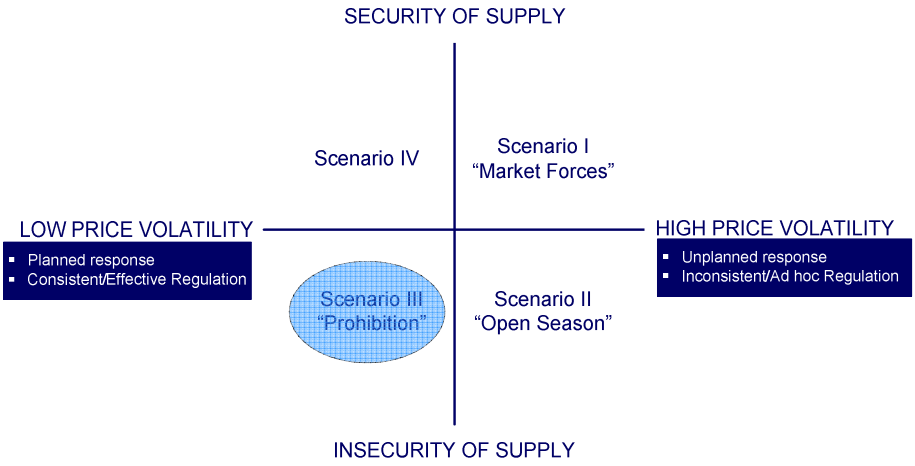
Responses

Legislative measures are largely reactive, driven by perceived energy insecurity and introduced only in response to observable activities. In an effort to preserve dwindling resources, MS legislate against immigration, effectively shutting their doors to migrants: accordingly, the largest migrant communities are found in the MS which are last to legislate. Higher penalties are introduced for crimes such as theft of fuel and energy components, and electricity diversion, as are administrative penalties for energy wastage and inefficiency. Legislation

against counterfeit products becomes more stringent as the negative effects of counterfeit medicines, etc. on public health and safety are observed, as does legislation against the underground economy in an attempt to protect legitimate commerce.

By the same token, new investigative priorities (e.g. fuel and IP theft) and reduced law enforcement capacity conspire to take their toll on the concept of Intelligence Led Policing. A shift of focus to national and local policing priorities makes transnational OC less visible, enabling it to flourish comparatively undetected. Environmental crime becomes a priority only when the effects of unregulated waste disposal become visible. Whilst there exists the will to regulate the energy and financial sectors with a view to determining the origin of investments and stabilising energy prices by limiting speculation, in practical terms the need for capital injection in an uncertain financial climate overrides this.

3.3 Scenario III - "Prohibition" = Low Energy Security + Low Price Volatility/High Regulation



In which regulation is king. Where there are more rules to break, so too are there more opportunities for OC to provide solutions, restricted commodities and cheaper alternatives.

Key characteristics:

- **Liquid fuel and electricity price banding**
- **Standardisation of taxation on energy within the EU**
- **Planned energy transition**
- **Heavily subsidised emissions reduction and energy efficiency initiatives**
- **New EU energy "hotspots"**
- **Restrictions for end consumers**
- **Civil and criminal penalties for non-compliance with new regulations**
- **Reduced mobility, increased "virtual" presence**

Key OC opportunities:

- **Public subsidy fraud**
- **Fuel and commodity trafficking to and from the EU**
- **Undercutting prices of licit fuel with illicit supply**
- **Provision of services with high fuel consumption, e.g. haulage**
- **Non-compliant construction, etc.**
- **Increased EU OC involvement in energy sector outside the EU**
- **Investment in renewable technologies**
- **Emissions Trade Fraud (ETF) and investment in Carbon Capture and Storage (CCS)**
- **Cybercrime and commercial cyber-espionage**

A world of low energy price volatility is one in which effective regulation – be this by means of fuel price banding or taxation – is key. EU MS therefore cooperate to achieve fuel price stabilisation. A stable price is not necessarily a low price, however, and the elimination of differences in taxation puts some of the newer MS at an economic disadvantage.

Subsidies ease transition

Subsidies on fuel are afforded to MS with lower levels of economic development. Indeed, this is an EU which relies on subsidies not only for price relief, but also for the implementation of planned energy transition. These subsidies enable, for example, MS with land to spare to become powerhouses for the production of biofuels, thereby boosting growth. From a social perspective, subsidies create new energy production and transition "hotspots" within the EU, which experience the social problems and volume crime associated with rapid urbanisation, and which act as a pull factor to migration – both licit and illegal – from outside. This inevitably puts added strain on law enforcement in these areas.

Subsidies incentivise energy efficiency, and demand and emissions reductions in MS, encouraging active participation in the EU. But where there are subsidies, there is subsidy fraud, and the potential for political corruption with the aim of rent-seeking. And since subsidies are necessary to the successful introduction of a range of green energy initiatives including renewable energy production, research and development (R&D), public transport and industrial Green Growth (e.g. LED production) there are a plethora of opportunities for OC in this arena.

An EU fossil fuel supply

A united EU negotiates with major oil and gas companies to ensure supply of hydrocarbons, impacting on bilateral agreements between MS and energy companies, companies' revenue from these and, ultimately, relations between the EU and major suppliers. Whilst the energy market within the EU continues to be liberalised, regulation is such as to discourage non-EU involvement.

Producing nations excluded from major deals with the EU start to engage with criminals in MS with a view to feeding illicit markets in the EU. By this token, state and non-state actors deemed unsuitable for partnership in licit energy supply have the opportunity to forge powerful networks of illicit suppliers. Some producing nations outside the EU are consequently in the process of transforming into rogue or pariah states, ultimately risking military intervention from consuming nations.

Standard fuel prices and tax levels across the EU shift OC focus from smuggling within the EU to smuggling to or from the EU. Policing the borders of the EU is therefore a high priority, with low levels of energy security making "leakage" particularly undesirable. By the same token, standardisation prompts the involvement of EU OC groups in illicit energy supply outside the EU, exploiting those areas where price and taxation differences persist. EU policing agencies therefore find themselves increasingly responsible for preventing and investigating energy-related crimes committed by their nationals overseas.

A new climate "industry"

In line with a more planned response to the issue of energy security, there is some political will to drive forward climate change targets. Accordingly, there is greater regulation of carbon emissions, and more severe penalties are introduced for environmental crime – both of which have positive effects on the environment in the longer term. Policy rather than market forces stimulates expansion in the EU Emissions Trading System (ETS), providing further opportunities for Emissions Trading Fraud, whilst the burgeoning industry of Carbon Capture and Storage (CCS) attracts the attention not only of public subsidy fraudsters but also of those wishing to place criminal investments. Beyond 2020, advances in carbon transport enable those MS wishing to store large amounts of CO_2 to benefit from subsidies and growth opportunities, but also engender a situation in which a small number of states become "carbon dumps" for the rest of the EU. Where OC is directly involved in CCS provision, its tendency to non-compliance raises legitimate concerns about public safety.

Measures taken to minimise price volatility also contribute to improving energy security, in time bringing the situation closer to the "ideal" scenario of low price volatility + high levels of energy security. In fulfilment of commitments to reduce emissions, renewable and nuclear energy solutions are developed at both MS and EU level. These require considerable amounts of investment over and above subsidisation which, along with investment in price-stabilised hydrocarbons and electricity, offer the prospect of sound returns in the longer term: with regard particularly to renewable technologies, as in "Market Forces" (Scenario I) OC's lower capital costs mean that it can step in to meet the shortfall in legitimate investment.

The overwhelming need for substantial investment in the energy sector to fund transition therefore supersedes the requirement for comprehensive legislation against money laundering and regulation of the origins of investments. Energy speculation, on the other hand, is increasingly the object of regulatory scrutiny, as MS and the EU seek to eliminate sources of price volatility: accordingly, energy investment is not so attractive to OC groups looking for

quick returns, but rather benefits those who are willing to play the long game, or who are content merely to have successfully placed the proceeds of crime. As in "Open Season" (Scenario II), transition to renewables entails – at least in the short term – a level of EU dependence on countries with reserves of essential components such as rare metals, or those with more developed expertise in green technologies. As a result, the EU is a choice destination for the illicit trafficking of renewable components.

Demand Limitation

Price stabilisation contributes to the prevention of economic volatility in general, which helps to make life more predictable for end consumers. At the same time, energy consumption is subject to a number of controls, and measures are introduced which are designed to effect profound lifestyle change. Energy efficiency measures are welcome where they have the added benefit of reducing costs for consumers, e.g. in the use of energy efficient light bulbs, white goods and buildings insulation. But where the drive for energy efficiency is enforced by means of prohibitive legislation or pricing it is met with some resistance.

So, when smart electricity grids are introduced in order to charge consumers more for energy consumed at peak times, and MS governments introduce in-car meters and charges for car use, public feeling against "surveillance state" measures gathers strength and concerns are raised over perceived moves to calculate the worth of a human being by means of his carbon footprint. This manifests as civil unrest, and MS law enforcement agencies find themselves increasingly required to abstract resources from combating OC in order to police public disorder.

Some private citizens inevitably look to unorthodox and even illegal means to maintain their lifestyles: in this context black markets for both foreign goods and liquid fuels flourish. More specifically, there is a market for fuel stolen or diverted from authorised use by e.g. agriculture and the emergency services. This impacts on the effectiveness of these sectors – including the responsive capacity of law enforcement – and renders employees in these professions vulnerable to corruption. Looking ahead, increased fuel losses prompt an expansion of marking or dyeing, and higher penalties for diversion. Detection of diversion, however, remains a problem. By the same token, there is a market for devices which subvert demand limitation measures, such as smart energy meter or vehicle charge "scramblers".

In order to enforce demand limitation, energy efficiency and environmental protection, penalties are introduced or made more severe. Where a criminal offence is established (e.g. environmental crime) investigation and prosecution falls to law enforcement in MS and, if

appropriate, at EU level: for civil or administrative transgressions such as energy wastage or failure to meet green construction regulations, fines are imposed. Over time, however, the authorities come to deal with such a high volume of infringements that some MS establish law enforcement agencies dedicated to policing offences relating to energy production and consumption.

Lifestyle and technological change

Those who accept the restrictions placed on their energy consumption inevitably experience lifestyle change. In the short-term at least, electricity, gas and petrol take larger shares of household and company budgets, encouraging reductions in consumption and an uptake of energy efficient technology. This manifests in small changes which impact on traditional perceptions of productivity e.g. prolonged travel times as a result of increased public transport use, a reduction in long distance travel for face-to-face business meetings. Facilitated by ever faster broadband internet connections – themselves increasingly energy efficient – individuals and commercial concerns exploit online and "virtual" presences to their full potential, until such time as research and development in aviation and automotive industries produce viable long-distance transport alternatives.

The more commerce is conducted online, the more data there is liable to compromise. Energy-related regulations therefore indirectly provide increased opportunities for internet facilitated organised criminality such as identity theft and – at a commercial level – cyber-espionage. The energy sector itself is vulnerable, e.g. to hacking into smart grids for the purposes of extortion or power diversion. Accordingly, the number of cybercrime investigations of this type is even higher than projected on the basis of technological developments alone.

Many OC groups experience the same constraints on mobility, etc. as other members of society: in this regard, policing them becomes more cost effective, as offline surveillance is replaced by online monitoring. Better resourced and better connected OC groups with ready access to illicit fuel supplies, however, have a commercial advantage in so far as they are able to travel comparatively unhindered and transport goods over long distances. In this regard they are able to provide services such as haulage which can no longer be fulfilled by legitimate business. In some MS, the impact of regulation is such that OC has more fuel at its disposal, and is therefore more mobile, than law enforcement.

4. Concluding Remarks & Next Steps

The scenarios presented in this document are not predictions of the future. The next ten years are unlikely to unfold exactly as described in any of the three narratives. Engagement in this exercise has, however, highlighted a number of different dynamics with the potential to affect interaction between Organised Crime and the energy sector at all levels, and the responses of EU law enforcement. There is now the opportunity to prepare for these by monitoring indicators of events described in the scenarios, and through due consideration of "gamechangers" – events such as major terrorist attacks, freak weather events or energy-related disasters, which have the potential to significantly alter the course of an apparently developing scenario. Moreover, in demonstrating the value of scenarios to Europol, this exercise paves the way for further use of futures methods in the EU's fight against Organised Crime.

5. Annexes

5.1 Select Bibliography

Baev, P., Bartuska, V. et al. (2008) *Pipelines, Politics and Power: the future of EU-Russia energy relations*, Centre for European Reform

Bray, D. A., Costigan, S., Daum, K. A., Lavoix, H., Malone, E. L. & Pallaris, C. (2009) "Cultivating Strategic Foresight for Energy and Environmental Security", *Environmental Practice* 11.3:209-211

Buchan, D. (2007) "Crusading against vertical integration", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Buchan, D. (2008) "Europe's complex climate compromise", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Buchan, D. (2008) "Politicians and prices – the itch to intervene", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Chow, E. & Elkind, J. (2009) "Where East Meets West: European Gas and Ukrainian Reality", *The Washington Quarterly* 32.1:77-92

Council on Foreign Relations (2008) "China, Africa and Oil", http://www.cfr.org/publication/9557

Covey, H. C. & Menard, S. (1983) "Crime in the region of Colorado affected by energy resource development", *Journal of Research in Crime and Delinquency* 20.1:110-125

Edwards, A. & Gill, P. (2002) "Crime as enterprise? The case of "transnational organised crime"", *Crime, Law & Social Change* 37:203-223

EMCC (2008) *Trends and drivers of change in the EU energy sector: Scenarios*, European Foundation for the Improvement of Living and Working Conditions, Dublin

European Commission (2008) European Energy and Transport: Trends to 2030 — update 2007, Luxembourg

Fattouh, B. & Allsopp, C. (2009) "The Price Band and Oil Price Dynamics", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Fijnaut, C. & Paoli, L. (2004) "Introduction to Part III: The Initiatives of the European Union and the Council of Europe", in Fijnaut, C. & Paoli, L. (eds.) *Organised Crime in Europe: Concepts, Patterns and Control Policies in the European Union and Beyond*, Dordrecht

Gilbert, M. J. & Russell, S. (2002) "Globalization of criminal justice in the corporate context", *Crime, Law & Social Change* 38:211-238

Giroux, J. & Hilpert, C. (2009) "The Relationship Between Energy Infrastructure Attacks and Crude Oil Prices", *Journal of Energy Security,* http://www.ensec.org/index.php?option=com_content&view=article&id=216:the-relationship-between-energy-infrastructure-attacks-and-crude-oil-prices&catid=100:issuecontent&Itemid=352

Giroux, J. & Michalkova, A. (2009) "Energy Infrastructure: Exposed, Exploited", *International Relations and Security Network*, http://www.isn.ethz.ch/isn/Current-Affairs/Special-Reports/Energy-Infrastructure-Exposed-Exploited/Non-state-Actors/

Glasgow Group (2007) *Enabling Strategic Intelligence on Energy and Environmental Security Impacts and Consequences*, International Design Team Meeting, www.climateactionproject.com/docs/GlasgowFinal.pdf

Global Witness (2006) *It's a Gas – Funny Business in the Turkmen-Ukraine Gas Trade*, Washington DC

Hamilton, J. (2009) *Causes and Consequences of the Oil Shock of 2007-8*, Brookings Papers on Economic Activity, www.brookings.edu/economics/bpea/bpea.aspx

Hansen, C. & Skinner, R. (2005) "Nuclear Power and Renewables: Strange Bedfellows?", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

IAEA (2008) IAEA Illicit Trafficking Database: Fact Sheet, Vienna, http://www.iaea.org/NewsCenter/Features/RadSources/PDF/fact_figures2007.pdf

IEA (2008) *World Energy Outlook 2008*, International Energy Agency, Paris

Keay, M. (2006) "The UK Energy Review and Decentralised Generation", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Keay, M. (2007) "Nuclear Power in the UK: is it necessary? Is it viable?", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Litvin, D. (2009) *Oil, Gas and International Insecurity: Tackling a Self-fuelling Fire*, Chatham House Briefing Paper, London

Loader, I. & Sparks, R. (2002) "Contemporary landscapes of crime, order and control: governance, risk, and globalization", in Maguire, M., Morgan, R. & Reiner, R. (eds.) *The Oxford Handbook of Criminology*, 3rd ed., Oxford

Muir, M. A. K. (2002) "European Energy Liberalization, and the Integration of Eastern Europe with EU Energy Markets and Environmental Initiatives", ENERGEX Conference, Krakow

Müller, B. (2006) "Adaptation Funding and the World Bank Investment Framework Initiative", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/articles.shtml

Müller, B. (2009) "Under the Authority of the COP?", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

NIC (2004) *Mapping the Global Future: report of the National Intelligence Council's 2020 Project*, Pittsburgh PA

Ruggiero, V. (2002) "Introduction – Fuzzy Criminal Actors", *Crime, Law & Social Change* 37:177-190

Segal, P. (2007) "A note on oil prices and the world economy in the IMF's *World Economic Outlook*", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/articles.shtml

Shell International (2008) Scenarios: An Explorer's Guide, The Hague

Shelley, L. (2004) "Contemporary Russian Organised Crime: Embedded in Russian Society", in Fijnaut, C. & Paoli, L. (eds.) *Organised Crime in Europe: Concepts, Patterns and Control Policies in the European Union and Beyond*, Dordrecht

Smith, K. C. (2008) *Russia and European Energy Security: Divide and Dominate*, Centre for Strategic and International Studies, Washington DC

Stern, J. (2008) "Security of European Gas Supplies – a survey of gas industry opinion from the FLAME Conference, Amsterdam, March 4, 2008, *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Stern, J. (2009) "Resumption of Russian gas deliveries to Central and East European countries on humanitarian grounds: a proposal", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Stern, N. (2007) *The Economics of Climate Change: The Stern Review*, Cambridge

Stevens, P. (2008) *The Coming Oil Supply Crunch*, Chatham House, London

Stevens, P. (2009) *Transit Troubles: Pipelines as a Source of Conflict*, Chatham House, London

Tillman, R. (2009) "Making the rules and breaking the rules: the political origins of corporate corruption in the new economy", *Crime, Law and Social Change* 51:73-86

Van Calster, P. (2006) "Re-visiting *Mr. Nice.* On organized crime as conversational interaction", *Crime, Law & Social Change* 45:337-359

Van der Linde, C. & de Jong, J. (2009) *Upping the Stakes: some lessons for the EU from the recent Russia-Ukraine gas crisis*, Clingendael International Energy Programme, http://www.clingendael.nl/publications/2009/20090200_ciep_briefing_paper_russia_ukraine.pdf

Van Zon, A. & Kronenberg, T. (2005) *General Purpose Technologies and Energy Policy*, MERIT, Maastricht

Vander Beken, T. ed. (2004) *European organised crime scenarios for 2015*, Antwerp-Apeldoorn

Vander Beken, T. ed. (2007) *The European Waste Industry and Crime Vulnerabilities*, Antwerp-Apeldoorn

Verfaillie, K. & Vander Beken, T. (2008) "Interesting times: European criminal markets in 2015", *Futures* 40:438-450

Verfaillie, K. & Vander Beken, T. (2008) "Proactive policing and the assessment of organised crime", *Policing: An International Journal of Police Strategies and Management* 31.4:534-552

Williams, P. & Godson, R. (2002) "Anticipating organized and transnational crime", *Crime, Law & Social Change* 37:311-355

Wright, P. & Rutledge, I. (2008) "Why the re-introduction of price control regulation is the only remedy which will work for domestic energy consumers", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/articles.shtml

Yenikeyeff, S. M. (2006) "The G8 and Russia: Security of Supply vs. Security of Demand?", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#

Yenikeyeff, S. M. (2008) "The Georgia-Russia standoff and the future of the Caspian and Central Asian energy supplies", *Oxford Institute for Energy Studies*, http://www.oxfordenergy.org/comments.php#