

# Securing Europe's energy infrastructure

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## Programme

**Session I - 12:00-13:30**

**European energy infrastructure and preparedness – assessing the risk**

With EU policymakers increasingly focused on security of energy supply, the need to protect Europe's energy storage and transmission infrastructure (gas, oil, electricity) is clear, but what is really at stake? What are the current risk priorities and typical incidents, and do they accurately reflect the threats? What is the real level of risk from terrorist/physical manmade attack? Does the recent discovery of cyber attacks to critical transmission electronics worldwide highlight a new vulnerability? Is Europe prepared to react to potential natural disasters facing EU energy infrastructure?

### Introductory remarks

**Luigi Rebuffi**, Chief Executive Officer, European Organisation for Security

### Speakers

**Fernando Sanchez Gomez**, Director, National Centre for the Protection of Critical Infrastructure, Ministry of the Interior (Spain)

**Joachim Vanzetta**, Chairman, Working Group on Critical System Protection, European Network of Transmission System Operators - Electricity (ENTSO-E)

**Jean-Arnold Vinois**, Head of Unit for Energy Policy, Security of Supply & Networks, Directorate General for Energy, European Commission

Moderated by **Giles Merritt**, Director of the Security & Defence Agenda

**Members' lunch – 13:30 – 14:30**

**Session II - 14:30-16:00**

**A new agenda for energy infrastructure? – building resilience into the system**

How can Europe enhance resilience in its energy infrastructure networks? What are the challenges for the development of a comprehensive EU level methodology for Risk Assessment and Contingency Planning for energy infrastructure in Europe? Could EURACOM methodology answer these challenges and be used to support implementation of the Critical Infrastructure Directive? At a time of financial crisis, what economic and political tools are available to renew Europe's ageing energy infrastructure? What technological solutions could be used to improve security?

### Speakers

**Yves Lagoude**, European Affairs Director for Transport and Civil Security, THALES

**Eric Luijff**, Principal Consultant Information Operations and Critical Infrastructure Protection, TNO

**Alexander Pschikal**, Ministerial Counselor, Security Policy Department, Federal Chancellery of Austria

**Dirk Tilsner**, Business Unit Manager SDBG, EDISOFT

Moderated by **Giles Merritt**, Director of the Security & Defence Agenda

## Speakers



**Yves Lagoude**  
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**Fernando Sanchez Gomez**  
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**Dirk Tilsner**  
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**Jean-Arnold Vinois**  
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Working Group on Critical System Protection European Network of Transmission System Operators  
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## Moderator



**Giles Merritt**  
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## Securing Europe's energy infrastructure



### Introduction

Energy security is one of the most pressing issues facing European policy makers, but while much media attention has focused on the threats to Europe's external energy supply, there has been less attention on the need to protect the continent's internal energy infrastructure.

Yet there are real risks, both from natural disasters and terrorist attacks against gas storage centres, oil pipelines, power stations, electricity transmission networks and other key energy infrastructure.

Finding ways to reduce those risks and boost the protection of Europe's critical energy facilities was the topic of this roundtable debate. Organised jointly by the SDA, the European Organisation for Security (EOS) and EURACOM, an EU FP7 security research project, the roundtable drew distinguished speakers from the private sector, national authorities and European institutions.

The debate sought to analyze the real level of risk, look at the priorities for raising the level of protection and consider the costs of modernising and upgrading Europe's aging energy infrastructure at a time when governments are struggling to cut costs and reduce budget deficits.

Speakers stressed that protecting energy infrastructure should be at the top of government security priorities since so many other sectors depend on the power networks.

An attack that shuts down the electricity supply could trigger a disastrous cascade effect that would hit key sectors from water supply to telecommunications. Despite

that there were widespread complaints that some European Union governments and private sector CEOs are not taking the issue seriously enough, with many businesses viewing increased security measures as an unnecessary additional cost.

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*"A growing sense of how very fragile our advanced industrialized society has become."*

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Much stress was put on the need for holistic solutions, overcoming divisions between the development of safety and security solutions; co-ordinating protection against both physical and cyber threats and ensuring that the private and public sector work together.

"Today's debate on energy infrastructure and its vulnerability is just part of a growing sense of how very fragile our advanced industrialized society has become," cautioned SDA Director **Giles Merritt**. "We are very dependent on energy and as the just-in-time structure of industry consolidated, that vulnerability became greater still."

### Assessing the risk

The opening session focused on risk assessment and Europe's level of preparedness for facing natural or man-made threats to infrastructure.

In his introduction, **Luigi Rebuffi**, Chief Executive Officer of the European Organisation for Security (EOS), stressed the crucial importance of energy to modern society.

"Energy has always been, in one way or another, at the origin or a major element of recent conflicts, revolutions



and threats to security in general. Its impact is huge in economic, environmental, political and social terms," he said. "Energy is fundamental to our way of life, to our society and economy. It's so evident and so needed that we take energy supply for granted."

That point was also taken up by other speakers.

"Energy for us is not a critical infrastructure. It is THE critical infrastructure, not only because of the services provided which are essential, but also because the phenomenon of interdependencies or cascade effects," said **Fernando Sanchez Gomez**, Director of the National Centre for the Protection of Critical Infrastructure in the Spanish Ministry of the Interior. "There is not a single service, not only in energy, but transport, water, food or telecommunications which is not linked to energy."

"What is at stake is the very state of welfare and the daily lives of the citizens. We are so dependent on these services that we simply cannot do without them ... we would be paralyzed and we would be taken back to the Stone Age," he stressed.

Rebuffi insisted that industry and the European public at large recognized that steps are needed to maintaining security for energy infrastructure.

"European citizens and economic stakeholders do agree that energy is the most critical among all infrastructures, therefore we agree that something must be done to protect it." The industry, working with European authorities though EURACOM, has been looking at ways to develop a comprehensive end-to-end risk assessment and contin-

gency planning for the energy supply chain.

Financed by the European Commission's research fund, EURACOM was set up in 2009 as a 18 month project to promote dialogue between energy and security stakeholders, propose a common European methodology on risk management and support European policies to increase the resilience of energy supply infrastructure.

Rebuffi said EURACOM had been particularly successful in building up trust across the different sectors and suggested it could become a model for closer cooperation.

"EURACOM could now be used ... as a guideline on methods for a more homogeneous implementation of the operator security plan, foreseen by the European CIP (Critical Infrastructure Protection) directive. Our approach could also provide a sound contribution to the objective of the recently adopted Commission communication on internal security strategy."

However, he said a number of problems remained. They include the failure of EU member states to adopt a harmonized approach to the implementation of the 2008 EU directive.

"Large countries and large operators do have sophisticated risk assessment tools, but we have also seen in EURACOM workshops that some smaller countries and smaller operators are lagging behind." That, he warned, risked creating weak spots and could have consequences far beyond the country concerned.

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“Energy networks, in particular electricity, can be sensitive to cascading effects and have severe consequences. You know that a chain is as effective as its weakest link,” Rebuffi cautioned. “Stronger coordination and adequate solutions to face critical situations should be taken across European countries.”

Another challenge is persuading companies to work together on risk assessment when they are reluctant to share sensitive information. He said that problem was particularly acute in the oil sector. Other problems included companies' resistance to security regulation, which they regard as additional cost burdens. Finally, there is a lack of clear budgets at a national and European level to contribute to the implementation of contin-

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*“It's not only the question of protecting the infrastructure, but also having a sufficiently well-meshed network of infrastructure.”*

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“National energy regulators are used to dealing with security of energy supply, but they have just started looking at specific issues concerning security of energy infrastructure,” he concluded.

From the European Commission, **Jean-Arnold Vinois** said clearly that the best guarantee for security of supply would be to have a fully functioning energy market at a European level. The Head of Unit for Energy Policy, Security of Supply and Networks, at the EC's Directorate General for Energy, pointed to the problems in 2009 when Russian gas pumped through Ukraine to several of the EU's eastern members was disrupted. The lack of an inte-

grated cross-border infrastructure complicated effort to supply them from Western Europe.

“It's not only the question of protecting the infrastructure, but also having a sufficiently well-meshed network of infrastructure, and that's particularly true for electricity and gas,” Vinois said.

Vinois ran through the measures introduced by the EU to boost security in the energy sectors in the past few years. He mentioned in particular the requirement for countries to maintain 90 days of oil reserves and to ensure continuous gas and electricity supplies from alternative producers in case their largest supplier is disrupted. He also highlighted the need for member states to carry out risk assessments in conjunction with gas stakeholders and to draw up action plans to respond to the risks identified.

“In the spirit of solidarity of the Treaty of Lisbon, there is the possibility to have joint plans. This means multinational plans developed by countries which have shared risks which are to be shared, because they are depending on the same pipeline, for instance, or on the same energy terminal or on the same storage. All this, I think, is a significant progress.”

That comment provoked a question from **Brooks Tigner**, Security Europe Editor, on the extent to which the solidarity clause in the Lisbon Treaty was leading to greater cross-border security cooperation.

Sanchez Gomez suggested there was a dichotomy between the increasingly interconnected nature of energy networks and the fact that protecting them remains a national issue.



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“No country is now isolated and we should depend on the surrounding countries. Yet the true is that security is a matter of national competence,” he said. “This is the main point of friction when we talk about the European directive.”

Getting an agreement among 27 nations is always hard he said, adding that the issue is further complicated by some countries like Spain and Britain being more aware of the need for greater security because of their experience as victims of terrorism. Other nations see less direct threats, and behave accordingly.

Vinois also stressed the need to modernize and upgrade Europe's energy systems. From generation units to distribution and transmission networks, Europe needs to make infrastructure them more efficient and more intelligent, to cope with the growing demand of electricity.

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“For us the key area of focus is to equip the European Union with modern infrastructure,” he explained. “In the next 10 years we need to invest something like €1 trillion in the energy system.”

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*“We must demystify, but we must not underestimate, the emerging threat posed by terrorism to our critical infrastructure and by cyber attacks in particular”*

Investment is particularly needed to increase the use of renewable energy, which as well as being environmentally advantageous can boost security by reducing the need for imported energy, which has longer supply and distribution chains.

“We want to have more renewables, which means more security, because you are building on local production of electricity. You need more interconnection and this is a major challenge,” he said. “There really is a need to understand that there is no security of electricity supply without having more interconnection in the future. Modernisation is only part of adding to these interconnections.”

**Joachim Vanzetta**, Chairman of the Working Group on Critical System Protection at the European Network of Transmission System Operators - Electricity (ENTSO-E), said however that the development of renewables is challenging for grid operators due to the need for huge investment in production, storage and transmission infrastructure.

“A big task for example in Germany is that we have to transport renewable energy from the northern part of Germany to the southern part ... and therefore we need a lot of new transmission lines,” he explained. In addition no wind or solar radiation energy can be stored in other generation facilities—either in thermal power plants or in storages—because electricity has to be produced just in time for consumption.

“Then comes that the problem that people do not want to have new lines. They want to have green energy, but they do not want to have transmission lines ... they say green energy is fine, as long as it is not in their back yard.”

Sanchez Gomez' department in the Spanish Interior Ministry was set up in the wake of the 2004 bombings which killed 191 people on the Madrid commuter train system.

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He said the unit focuses on three kinds of threats: natural disasters such as floods, storms, earthquakes and fires; man-made attacks from terrorism or sabotage; and geo-political instability leading to shortages of supplies.

While natural disasters are the most common threat, terrorist attacks have the potential to be the most damaging.

The Spanish official said the wide range of information on the Internet meant it had become easy for terrorists to find details on the key elements of critical infrastructure and identify weak spots. He said this was a much underestimated negative consequence of transparency policies.

From the audience, **Dafydd Ab Iago** from Europolitics asked other panellists if they shared the concern over too much transparency.

Vanzetta also questioned if all the information that the industry has to publish on the internet for market purposes is necessary. He pointed out that any second-semester electronics student could easily discover by analysing publication the location of the most vulnerable points on the European grid by analysing publications on the web.

Sanchez Gomez placed particular emphasis on the growing threat from cyber attacks on critical infrastructure.

"The internet is a terrorist instrument. This is real ... they are using Internet as an instrument," he warned. "We

must demystify but we must not underestimate the emerging terrorist threat to our critical infrastructure and by cyber attacks in particular."

*"We think we have made progress in developing a holistic approach which is able to help contribute to the resilience of infrastructure production in Europe."*

Last years' attack on Iran's nuclear facilities by the Stuxnet worm and the recent infiltration of the EU's emissions trad-

ing system by cyber thieves were both held up as examples of the growing threat posed by malicious attacks on IT systems. Vanzetta explained what in practical terms the transmission business is doing to improve protection of transmission lines and other infrastructure serving 530 million consumers around Europe.

"One of the very big problems for us is the financing," he said. "As you can imagine, if we were to protect our complete grid which is about 300,000 kilometres of transmission lines and a lot of substations and transformers, that would mean we would have to invest a lot of money in our assets, even though the physical protection of lines is unfinished at the moment."

### Building resilience

The afternoon session looked more closely at how to build resilience into the system and went into more detail about the EURACOM methodology and its usefulness in supporting the implementation of the EU's critical infrastructure directive.

There was broad agreement that the EURACOM experience has been useful, but several persistent problems remained, amongst other that changes in mentality are



required as well as technological advances for Europe to counter the threats.

**Dirk Tilsner**, Business Unit Manager SDBG at the Portuguese IT company EDISOFT, kicked off the debate with an overview of the work of EURACOM, where he had contributed to the contingency planning component.

He outlined how EURACOM built up a strong dialogue with major stakeholders through workshops, in order to develop a common methodology and terminology in assessing the risks and outlining possible responses.

He said that the stakeholders agreed that there was a need for a holistic approach and that the different players should not work in isolation. "We think we have made progress in developing a holistic approach which is able to help contribute to the resilience of infrastructure production in Europe," he explained.

There was broad support for the EURACOM project. "It's a comprehensive approach. It goes beyond what member states are normally doing now and it's a common and holistic approach to risk assessment. I think it was very good to compare all these standards and possibilities," said **Alexander Pschikal**, Ministerial Counsellor in the Security Policy Department of Austria's Federal Chancellery.

However, Pschikal warned that some European governments are not taking the European Programme for Critical Infrastructure Protection seriously. "At least four members from the EPCIP programme did-

n't show up to these discussions, and at least four member states did not identify any critical infrastructure in the energy sector," he complained.

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*"It's a problem we have in our heads, it's a question of perception of crises and risks and we should change it because it's a social problem."*

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"Many others are really reluctant ...and only a few are really active, so the perception and ideas are very different."

In the private sector too top management often does not give sufficient priority to the problem.

"The current situation clearly calls for some improvements. When we talk to customers it's clear that they have a high degree of awareness and a security culture. Yet clearly security people in energy operators are not always talking at the right level with the production people, and the management people," said **Yves Lagoude**, Director of European programmes for civil security and transport at the French company Thales.

"Another important point is that from a management perspective, security is seen as a cost factor, not benefiting the corporations."

Pschikal agreed that the market system is "hindering security" because companies are seeking to cut costs.

Given that lack of consistency from EU member states and energy companies, moderator Giles Merritt suggested somebody needed to "crack a whip" to ensure implementation. The sheer size of Europe's energy networks means it is not possible to provide 100% protection, Lagoude acknowledged.

"The linear part of the energy networks is difficult and

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even impossible to protect absolutely. Protecting a pipeline is a challenge, protecting an electricity grid is also a challenge and there's currently no 100% secure solution for that purpose," he said.

From the Netherlands Organization for Applied Scientific Research (TNO), Principal Consultant Information Operations and Critical Infrastructure Protection **Eric Luijff** took the debate back to the threat from cyber attacks.

He ran through a number of recent cyber incidents to illustrate the clear and present nature of the threat. Like earlier speakers, he pointed out how the increased divulgence of data being exchanged by companies as a result of the push for European energy market liberalisation was increasing their vulnerability to hackers.

"Often public networks such as the internet are used for those data exchanges. A small human configuration mistake or a new zero-day exploit allows malware and hackers to penetrate to the core of the critical energy supply systems," Luijff said. "Moreover, as the process control systems were never developed for less than benign use, the current risk is high. Industrial control systems are even more sensitive to malware and unexpected information packets than your laptop."

The future development of so-called smart grids, in which energy networks are augmented with information and communication technologies, can bring many benefits in terms of cost and environmental savings, Luijff said. But they could also be more vulnerable to cyber attacks unless proper defences are developed.

"The societal risk is that massive disruption of energy supply occurs when the cyber infrastructure fails. Intruders may arbitrarily turn off the power to thousands of homes or randomly charge users a higher rate than appropriate, while skimming the difference to their own account," he warned.

*"We are aiming toward integrated solutions, but the more we get integrated the more we need methodologies which encompass the whole of the problem."*

"It is therefore absolutely crucial that cyber security covers not only the security of the smart devices but also that of the whole information chain, across and between all involved energy and information-processing organisations."

Pschikal suggested that a change in mindsets is needed as much as new technological advances to ensure that companies and policy makers are giving security the necessary priority.

"I'm not a technician, but I think it's a problem we have in our heads, it's a question of perception of crises and risks and we should change it because it's a social problem," he said. "When we have a social problem, we are always looking for technical solutions, but this can't work."

Taking the Austrian example, Pschikal said that there is a need to build up trust between industry and security services.

Lagoude concurred, saying that the various players had to work together beyond a "silo mentality" which is often prevalent. He pointed as an example the need for

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building up trust and cooperation between the various cyber emergency response teams being set up by EU nations.

"We are aiming towards integrated solutions, but the more we get integrated the more we need methodologies which encompass the whole of the problem," he concluded.

From the audience, **Stefan Gustafsson** from the Swedish power company Vattenfall asked about the need for increased public awareness of the risks; **Adm. Lutz Feldt** of the German Maritime Institute asked if the EURACOM had looked also at the maritime dimension; and **Mehmet Kinaci** from NATO's Allied Command Transformation questioned the level of exchange of intelligence between security services in order to make the system work.

Summing up the debate, Rebuffi returned to the subject of money, explaining that the European security system market is of €10billion with the energy sector just a part of that. He suggested that special bonds could be levied to provide financing.

At the very least it was clear that a significant amount of investment, in terms of new capabilities, training and security systems, would be needed to secure Europe's energy infrastructure.

## List of participants

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# EURACOM

**EURACOM**, a European Commission (DG ENTR) - FP7 financed Coordination Action, addresses the issue of protection and resilience of energy supply for European interconnected energy networks.

Its objective is to identify, together with European Critical Energy Infrastructures operators, a **common and holistic approach (end-to-end energy supply chain) for risk assessment and risk management solutions**.

EURACOM's common and holistic approach for risk assessment and contingency planning solutions addresses all energy sectors: from fuel transport, electricity generation (nuclear and fossil fuel plants), over electricity transmission, oil and gas pipelines, up to fuel storage (nuclear fuel, nuclear waste, oil, and gasification plants).

It covers the full incident response cycle (pro-action, prevention, preparation, incident response, and recovery) spanning multiple operators in single nations as well as across national borders - especially in the case of malicious attacks and systemic failures - and increase the resilience of services.

By establishing links and coherent risk management procedures across energy sectors and EU countries, the resilience of critical energy services across the whole ('end-to-end') energy infrastructure chain is sought to be increased.





## EUROPEAN ORGANISATION FOR SECURITY

**The European Organization for Security - EOS** ([www.eos-eu.com](http://www.eos-eu.com)) was created in 2007 by major European security stakeholders, representatives of the defence, civil security, information technologies and communications, energy and transport sectors. EOS is a limited liability cooperative company under Belgian law and operates as a not-for-profit organization. Today EOS counts 31 members from 12 countries across Europe.

**EOS' main objective** is the development of a consistent European Security Market in close cooperation with users from the public and private sector, while satisfying political, social and economic needs, through the efficient use of budgets and the implementation of available security solutions and services in priority areas.

**In order to develop the security market**, EOS supports the development of security systems and services at the European level that can subsequently be introduced into Member States' and the global security market.

**EOS aims at responding to the need for defragmentation** of the European security market and to improve the knowledge of end-users' operational needs by:

- providing coherent links across different sectors (*with associations and members of various associations in the domain of ICT, Civil Protection, Border Control, and the Protection of Critical Infrastructures*), and different European countries (*National Organisations for Security*), as well as with different European Institutions and, where necessary, national or international Organisations (*e.g. UN, OSCE*), while also promoting global approaches (*architectures and integrated systems*);
- establishing a dialogue between the public and private sectors at the highest level.

Together with its Members, EOS also works on **improving the knowledge of policy makers** on the existing and future solutions as well as on the position of the European Security Private Sector by:

- acting as an adviser to various Directorates-General of the European Commission (*DG HOME, ENTR, MARE, INFSO, ECHO, JRC, RELEX, MOVE, ENER*) and EC Agencies (*Frontex and ENISA*), the European Parliament (*Committees: LIBE SEDE, ITRE, TRAN*), and the Council (*e.g. anti- terrorism coordinator*), and European organizations for standardization (*e.g. CEN*) in support of the definition of security policies, new regulations, future research programs, etc.;
- proposing the European and national administrations common recommendations prepared by the experts of EOS Member companies (*White papers*) for the development of concrete actions in the different security sectors.

**Today, the EOS main recommendations are the following:**

- Development of a dialogue and cooperation at the European level between the different security actors of the public and private sectors for the definition of common objectives and for the setting up of an adequate and sustainable environment for enhanced European Security (*procedures of standardization, regulations, legislation, interoperable architecture, interface of compatibility, innovative methodologies and / or common procedures for risk management, definition of best practices, etc*).
- Creation of European Security Programmes in cooperation with the public and private sectors in key sectors (*Border Control, Civil and Citizens' Protection, Cyber Security, and Protection of Critical Infrastructures*) to develop appropriate skills for the needs of users with an "end-to-end" approach: from the definition to operational needs, to the phase of research, demonstration, industrial development, deployment, and validation and certification.
- Supporting convergence and optimization of existing European funds in a European Fund for Internal Security and its coordination with the national funds to improve the purchase of related European solutions and implementation of the capacities to support the needs of Member States



# SECURITY & DEFENCE AGENDA



The Security & Defence Agenda (SDA) is the only specialist Brussels-based think-tank where EU institutions, NATO, national governments, industry, specialised and international media, think tanks, academia and NGOs gather to discuss the future of European and transatlantic security and defence policies in Europe and worldwide.

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Building on the combined expertise and authority of those involved in our meetings, the SDA focuses on how EU and NATO policies can complement one another, in areas as varied as missile defence, cybersecurity and transatlantic defence industry.

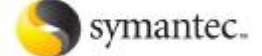
By offering a high-level and neutral platform for debate, the SDA sets out to clarify policy positions, stimulate discussion and ensure a wider understanding of defence and security issues by the press and public opinion.

SDA activities include roundtables, evening debates, press dinners and lunches, international conferences and discussion papers and special events.





The Security & Defence Agenda (SDA) would like to thank its members and partners for their support.



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