

CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

ANNUAL REPORT 2010



Clingendael International Energy Programme (CIEP)

Affiliated to the Netherlands Institute of International Relations, 'Clingendael', CIEP acts as an independent forum for governments, non-governmental organisations, the private sector, media, politicians and all others interested in changes and developments in the energy sector.

CIEP organises lectures, seminars, conferences and roundtable discussions. In addition, CIEP staff members lecture in a variety of courses and training programmes. CIEP's research, training and activities focus on three themes:

- Regulation of energy markets (oil, gas, electricity) in the European Union;
- International economic and geopolitical aspects of oil and gas markets, particularly with respect to the European Union security of supply; and
- Energy and sustainable development.

CIEP is endorsed by BP, the Dutch Ministry of Economic Affairs, Agriculture and Innovation, Eneco, Energie Beheer Nederland, Essent, the Dutch Ministry of Foreign Affairs, GasTerra, Nederlandse Gasunie, GDF Suez, ING, NAM, NUON, Oranje-Nassau Groep, Port of Rotterdam, RWE, Shell Nederland, Total E&P Nederland, the Dutch Ministry of Housing, Spatial Planning and the Environment, Tennet TSO B.V., Vopak Oil Europe Middle East, Wintershall, Delta, Electrabel, and Esso Nederland.

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2010: Like a Moon with Two Faces

After the disastrous collapse of economic growth in many economies around the world in 2009, this was supposed to be the year of recovery. Yet, 2010 economic recovery was hesitant in some places and unequally distributed around the world. The emerging market economies recovered to healthy growth rates fairly quickly, while recovery in the OECD countries was much more hesitant. Fiscal stimuli in many economies served to soften the blow but could not prevent the recovery from being unsynchronised and slow, and leave the world economy unbalanced. Demand for energy reflected this state of affairs.

The international natural gas market experienced a spectacular switch from a seller's to a buyers market. The timing of the drop of in demand could not have come at a worse time. In 2010 large LNG export capacities came on stream in Qatar, while at the same time substantial volumes of unconventional gas supplies managed to reach the market. The latter implied that demand for imported LNG in the US dropped to zero. In Europe, demand dropped below the 'take' of some large importers from Russia, Norway, and the Netherlands, reducing the appetite for spot LNG. Spot prices declined rapidly and suppliers under long-term contracts temporarily relaxed the conditions of the contracts to share the pain of demand dropping and prices falling. In 2010, gas prices in the US remained uncoupled from oil prices, while before 2008 the causality of these two prices had been large. Given the much more rosy supply situation in the US, this new price relationship is expected to continue for some time, making the US market a less attractive 'bank' for natural gas. In Europe, oil indexed natural gas prices came under more pressure, particularly when OPEC managed to stabilise oil prices from the summer onwards at a level that kept some of the marginal oil supplies in the market (\$60-70 per barrel). Relaxing the contractual conditions for the LT contracts for the duration of the worst of the crisis reduced some of the pressure, but the topic of pricing system is bound to resurface.

The crisis also impacted international oil demand. In 2007 pre-financial crisis oil demand in the world had peaked at 86.7 mb/d, declined to 86.1 in 2008, and further declined to 85 mb/d in 2009. In 2010 the two faces of the moon began to surface when world oil demand increased to 87.9 mb/d. Yet, this growth was mainly driven by demand from emerging markets and the Middle East. Oil demand in China continued to grow throughout the crisis, from 7.6 mb/d in 2007, a modest increase in 2008 to 7.7 mb/d, to 8.4 mb/d in 2009 and 9.4 mb/d in 2010. Non-OECD oil demand continued to grow during the financial and economic crisis and was in 2010 4.5 mb/d higher than in 2007. OECD oil demand in that period clearly dragged total world demand down. In 2007 oil demand peaked at 49.6 mb/d, declined in 2008 to 47.6 mb/d, and then declined further to 45.5 mb/d in 2009. Only in 2010 oil demand began to recover to 46.1 mb/d, still well below 2007 levels. Saudi Arabia is now supplying more oil to China than to the US, and the developments in Australia have become crucial to satisfy China's energy needs. The geography of energy supply and demand is changing rapidly. The economic downturn and its aftermath have merely emphasized this trend.

In the midst of these changes in the international energy markets, the non-OPEC energy industry received in a blow from the Macondo oil spill in April because it cast a shadow over one of the crucial areas of oil production growth outside OPEC, the deep offshore. With important new developments in Brazil and Africa underway, the industry came under closer scrutiny, also outside the US.

Although the economic crisis had temporarily reduced the pressure on international markets, the debates on how best to address climate change and diversity of supply issues continued also in 2010. With the launching of the fiscal stimulus programmes investments in more sustainable energy resources was propagated by many politicians. In the course of 2010 it became clear that the rate of 'green' expenditure was not as revolutionary as was hoped for. Many governments in Europe had instead to reconsider financing these energy and climate policies in the context of their shrinking government budgets. Again the dynamics of economies such as China began to capture the headlines with the rapid growth of installed wind capacity, the stepping up of solar panel production and their investments in battery technologies. Although the contribution in total energy demand in China of these new sustainable technologies is still very small, the pace with which the country is approaching these challenges is impressive. The advance of China in new energy technologies also brought tension in rare earth markets when China applied further export restrictions to stimulate domestic industries.

At the end of 2010, the impressive growth of oil demand in emerging markets began to impact on price levels. Also in other resource markets, demand had picked up and indicated that full recovery of the world economy would reinstate tightness to many markets, with the exception of natural gas where working away the glut would take some more time.

The economic strength of the emerging economies, translated in strong growth of energy demand is yet more evidence of the subtle but certain shift in economic gravity away from the OECD countries. This was also reflected in international economic governance where the G-20 overtook the G-8 in geopolitical importance, although this new group is still groping for consistency. Emerging market economies wish to be included in global governance issues, but seem reluctant to bear the accompanying costs. Addressing the unbalanced international economic relations may take more time. As long as the international system is unbalanced, major economies are engaged in strategic positioning to be ready for the next move. In addition, in the EU a similar process is taking place at the internal level. Weakened by the crisis in the euro-zone, member states are hesitant in addressing the internal unbalances, leaving many uncertainties on the outcome. These uncertainties are bound to be reflected in the energy policies of the member states.

The year 2010 was for CIEP a year with a smiling face. Two of our staff members defended their PhD theses in at Groningen University, and many roundtables, lectures and papers were organised and produced by the CIEP staff. The brainstorm groups were very active and remain at the core of the CIEP research agenda. It is always amazing to see how quickly all sorts of events and changes in the markets find their way into CIEP activities. It testifies to the commitment of everyone involved with CIEP to approach energy with a large dose of open-mindedness to change and enthusiasm to tackle the issues at stake.

The agenda – 2010 research and activities

The year 2010 was the second year of the four-year research period as described in *CIEP 2009-2012 Energy: Between a Rock and a Hard Place*, and the accompanying budget, and as agreed by the Board of Stichting Fonds Instituut Clingendael and the participating institutions. (Appendices 1 and 2).

In the current four-year research plan, the three main headings under which CIEP has conducted its research agenda were left unchanged compared to the previous periods. International market developments, security of supply and demand issues, and developments towards a more sustainable energy mix, drive the research agenda but increasingly so in an integrated and interrelated manner. They help us to study the various aspects of energy policy from different angles, and structure the work to address the research questions posed in *2009-2012 Energy: Between a rock and a hard place*:

- A. Regulation of energy markets (oil, gas and electricity) in the European Union;
- B. International economic and geopolitical aspects of the oil and gas markets, mainly with respect to the security of oil and gas supply in the European Union, in the context of an increasing dependence on imported energy; and
- C. Energy and sustainable development.

Theme A – Regulation of energy markets (gas and electricity) in the EU

Gas Group

Research and activities on gas-related matters were supported in 2010 by regular meetings of the CIEP Gas Group. The Gas Group consists of around 25 natural gas experts, mostly from CIEP's supporting institutions. The group acts as a sounding board for CIEP natural gas related studies and activities. For some studies, smaller working groups exist that actively support certain parts of the research work. In 2010 the following studies were thus supported:

- Future Need for Seasonal Gas Storage in NW Europe.
- The Role of Natural Gas in the Energy Mix for Power Generation in North West Europe.

The Gas Group also provides a platform for other experts to discuss their insights in the international gas market. Representatives of energy companies, governments, other institutions and CIEP presented their insights at Gas Group meetings on the following topics:

- Energy Policy and the Northwest European market: fuel mix and infrastructure
- The evolving role of LNG in the gas market
- Roundtable discussion on the Caspian Development Corporation and Southern Corridors
- Possible role of LNG for seasonal flexibility Northwest Europe
- Optimizing the structure of the natural gas market using an agent based modelling framework.
- Long term strategy for CO₂ storage in the Netherlands
- EU Regulation on Security of Supply

The CIEP *Gas Day* 2010 in the first week of September, focused on the new uncertainties which the gas market is facing: it addressed the role of gas in the European energy mix under different scenario's, the impact of market uncertainties on the market players, possible strategies of Gazprom and the role of the EU in acquiring new gas supplies and in developing new gas infrastructure. The speakers consisted of a mix of senior representatives from the gas industry and the academic world.

CIEP Fuel Mix Group

The Fuel Mix Group discusses issues relating to Dutch and European energy policy, energy infrastructure, transition and the future fuel mix. In four sessions in 2010, participants discussed several subjects, such as energy roadmaps to 2050, the role of gas in the power sector, initiatives to develop a European Energy Community, policy measures to increase the share of renewable power generation, and Emission Performance Standards. More in particular, the group focused on the various options for generating electricity and the policy instruments that could be developed to give the right incentives. The role of feed-in tariffs, various forms of obligatory shares of renewables in the energy mix, either for consumers, producers or suppliers, new market designs, such as capacity issues, the role of ETS and the price of carbon. The role of nuclear energy was also discussed when it gained prominence with policymakers. In particular the input of CIEP to the Nuclear Policy Package, presented by the Dutch government in the spring of 2010, was discussed. Like in the Gas Group, the interaction between gas and electricity, with the potential for gas to become a major supplier of flexibility in relation to the increasing role of intermittent energy sources was a major subject in Fuel Mix discussions.

Presentations of and discussions with the participants served as input for a CIEP Energy Paper on energy policy and the Northwest European market, focusing on the fuel mix and infrastructure which was published in February 2010. Inputs were also coming for studies that were discussed in the context of CIEP's gas group, where the role of gas in the electricity sector is under study. Further initiatives are being considered, probably on new electricity market designs, capacity markets and the role of carbon pricing.

Current participants are: Delta N.V., the Ministry of Economic Affairs, the Energy Research Centre of the Netherlands (ECN), Electrabel N.V., Eneco B.V., Essent N.V., Nuon N.V., Platform of Sustainable Electricity Supply (Platform Duurzame Electriciteitsvoorziening), TenneT B.V. and VME (Nederlandse Vereniging voor Marktwerving in Energie).

The interaction between gas and electricity on system level in Northwest Europe

Since the 1990s gas is the fuel of choice in Europe for generating power due to technological breakthroughs and environmental advantages over other fossil fuels. Simultaneously, policy makers have tried to stimulate the use of renewable energy sources for power generation such as wind. In order to cope with intermittent electricity supply, sources of flexibility will be needed. Gas seems to be the preferred option, inferring that the physical and contractual situation, as well as regulation regarding gas infrastructure should be able to provide for the flexible supply of gas. This could also have implications for gas exchanges and the way balance responsibility is organized. Furthermore, it cannot be ignored that other sources of flexibility, such as market integration combined with electricity storage could be more suitable. This would imply an increased need for investment in the electricity grid, particularly interconnection capacity. In order to explore these issues an expert discussion was

organized in March 2010 with presentations from N.V. Nederlandse Gasunie, TenneT and APX-ENDEX.

The Caspian Development Corporation & Southern Corridors

Early in 2009, the European Commission, in cooperation with the World Bank, EBRD, EIB and Energy Community, launched a study into the design of a Caspian Development Corporation. This concept aims to support upstream gas sector investment and midstream infrastructure development in the Caspian region & Middle East by aggregating gas demand to: strengthen the European Union's leverage (i.e. Energy Community States) relative to Russian and Chinese state owned monopolies over Turkmen gas; ease the negotiation burden and accommodate Caspian & Middle Eastern gas producers that prefer to sell major volumes at border delivery points; facilitate diversified gas supplies to the European Union through Southern Corridors and underpin strategic investment into the Caspian & Middle East.

The initiative has sparked a debate on established market rules and corporate gas sector practice. On July 6, 2010, CIEP organised a briefing by the principal administrator of DG-ENER, Mr. Brendan Devlin, followed by a roundtable debate.

Theme B – International economic and geopolitical aspects of the oil and gas markets,
mainly with respect to the security of oil and gas supply in the European Union, in the context of an increasing dependence on imported energy

CIEP Oil-group Meetings 2010

As part of its ambition to facilitate discussions between relevant stakeholders in the oil industry, CIEP facilitates an informal oil discussion group. This group focuses on current events and trends that influence the oil sector now and in the near future. Convening irregularly throughout the year, the oil-group met three times in 2010. Discussions focused on the turbulent development of demand and supply in international liquid fuel markets, distribution of rents in the oil value chain and structures of ownership in the oil industry.

The discussions in the oil-group resulted in a CIEP conference on developments in the oil sector.

A decade of uncertainties: Coming to grips with new oil market realities

On 1 July, CIEP organised a conference on the oil sector's adjustment to the new market realities in a (post)crisis market environment. The international oil markets in 2009 and 2010 saw a recovery and stabilisation of oil prices and, at the same time, a need of the industries to restructure and adjust to new market realities. Oil demand dynamics confirmed the shift of demand to Asia, while demand is slow to pick up in OECD countries. The central question was if the market participants are on par with the new market developments or that they hope to return to a pre-crisis state of affairs. Issues that were covered featured current supply and demand dynamics, oil price formation and the influence of speculators, regulatory efforts to tackle oil price volatility, shifting oil flows to Asia and an outlook for the downstream oil business. During the seminar senior representatives from Chatham House, WoodMackenzie, Oxford International Energy Studies (OIES), Centre de Géopolitique de l'Énergie et des Matières Premières (CGEMP) and Vopak presented their views on the oil sector's new market realities.

During the CIEP end-of-the-year event in December, Mr. Claude Mandil, the former executive director of the International Energy Agency (2003-2008) offered his personal viewpoints in a presentation on energy security. Mr. Mandil reflected on European policy and market trends in relation to the increasing reliance of the European Union on imports of fossil fuels. He cautioned against 'nationalist' tendencies that favour energy independency over market integration with external suppliers. Instead EU governments should show solidarity and more international engagement with the interests of producers and bring up the discipline to stick to their policymaking role to enable market actors to compete and mobilise the necessary investment effectively. In a period of unprecedented uncertainty, enhanced dialogue on the basis of open and market-based policies will ensure the energy security the European Union and its international partners need.

Theme C – Energy and sustainable development

The entry into force of the Lisbon reform treaty in December 2009 further engages the European Parliament in shaping Europe's future energy and climate policies. There is much to do about energy and economic governance in Europe and beyond. New initiatives on energy security, market integration and the transition to a lower carbon economy require depth and consistency to mobilize government, industry and public support. A robust governance framework is essential to coordinate and optimize efforts. Also the European Parliament plays a major role in this regard.

Inspired by Robert Schuman's initiative in May 1950 and the multifaceted energy security and climate challenges, European Parliament President Jerzy Buzek and former European Commission Chairman President Jacques Delors placed energy at the centre of EU integration and economic recovery in May of 2009. Their declaration alleges that rules granting equitable access to common resources no longer exist and that, beyond market liberalization and interconnection, new and bolder approaches are required. The new 'European Energy Community' they foresee, proposes among other things the creation of combined purchasing concepts, possibly involving a degree of regionalization of the EU internal market through enhanced cooperation among EU member states.

Coinciding with the COP 16 meeting in Cancún, and on the eve of the Council of the European Union meeting on energy in February 2011, CIEP hosted an exclusive dinner debate on energy and climate change policy on 30 of November 2010. The President of the European Parliament Jerzy Buzek introduced his views on Europe's energy and climate change policies in an informal setting. Mr. Hans Alders, Chairman of 'EnergieNederland' and Prof. dr. Hans Vijlbrief, Director-General Energy and Telecom of the Ministry of Economic Affairs, Agriculture and Innovation of the Netherlands acted as key respondents among selected senior level invitees.

The EU 2050 Energy Challenge

Until recently, the "long term view" of energy policy makers and researchers focused on 2020, partly due to the challenging 20-20-20 EU energy policy targets. As a result of the Copenhagen COP-15 summit, a more long-term perspective came to the fore to limit global temperature increase to 2° C in 2050. The long-term perspective on a low carbon energy economy is accompanied by the expectation of achieving a more diversified and secure energy mix. The potential routes to such an energy economy are subject of much discussion.

In May 2010, CIEP explored the EU 2050 energy challenge with a group of outstanding experts. Topics such as a 2050 Road Map, a set of smart EU energy policy recommendations as well as new policy approaches within the EU on the basis of more regionally oriented cooperation were addressed. Also large-scale offshore wind energy deployment in the North Sea was discussed.



Challenges of the Netherlands' energy policy: Developing strengths

On 25 August 2010, CIEP and the Dutch Ministry of Economic Affairs organised a seminar, which addressed the key energy challenges and opportunities for the Netherlands as a major gas exporter but also, based on its excellent geographical position and infrastructural facilities, to extend its hub function for oil and gas to other energy sources. Participants in the seminar offered their analyses and visions on future developments in renewable energy, gas, infrastructure and the geopolitics of energy. The seminar was closed by a presentation of Maria van der Hoeven, Minister of Economic Affairs, reflecting on the policy achievements of the past few years.

Projects

International Gas Union (IGU)

Under the Malaysian Presidency of the International Gas Union (IGU), which runs from 2009 until 2012, CIEP has been asked to prepare a study on Geopolitics and Natural Gas. In 2010 a draft study was prepared by CIEP researchers and presented to the IGU Task Force 3 group in Toronto in May 2010. This draft is the basis on which 4 regional roundtables will be organised: Asia, Middle East and North Africa, Europe and CIS and South America. A fifth roundtable with the IEA will wrap up the discussions on the general theme, after which a final report will be prepared for the World Gas Conference in Kuala Lumpur in June 2012. In November 2010, the first regional roundtable conference took place in Taipei, Taiwan. Both Coby van der Linde and Dick de Jong attended this meeting. They head the research project. Other CIEP staff contributed from their various fields of expertise to the draft study.

Dick de Jong is a member of Taskforce 3, while Coby van der Linde is a member of the Wise Person Group of the IGU.

The POLINARES Project

EU policy on Natural Resources: <http://www.polinares.eu/>

POLINARES is a project under the EU Seventh Framework Programme (FP7), part of the socio-economic and humanities research for the European Commission. The project examines the global challenges with respect to access to oil, gas and mineral resources over the next 30 years and explores potential robust strategies for the various policy actors, including the EU. Both theoretical and applied analyses from various disciplines, including political science, economics, geology, engineering, technology, law and security studies, are brought together to investigate the future potential for conflicts or cooperation in energy and minerals.

CIEP is a partner of the POLINARES project consortium, which started work on 1 January 2010 and will end 31 December 2012.

The Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP) at the University of Dundee leads the POLINARES project consortium. Other partners are eleven other institutions from across Europe:

- Clingendael International Energy Programme, Netherlands
- Bundesanstalt für Geowissenschaften und Rohstoffe, Germany
- Centre National de la Recherche Scientifique, France
- ENERDATA, France
- Raw Materials Group, Sweden
- University of Westminster, United Kingdom
- Fondazione Eni Enrico Mattei, Italy
- Gulf Research Center Foundation, Switzerland
- The Hague Centre for Strategic Studies, Netherlands
- Fraunhofer Institute for Systems and Innovation Research, Germany
- Osrodek Studiów Wschodnich, Poland

CIEP's contribution to POLINARES is to provide a link between energy market developments and international political relations. CIEP is mainly involved in the first part of the POLINARES project, which is aimed at identifying the causes of past and current conflicts and tension relating to access to oil, gas and minerals and developing a framework for future developments in this area. Additionally, CIEP assists other partners in identifying future policy approaches for the EU in this context.

During the first phase of the POLINARES project in 2010, CIEP contributed to the development of the theoretical framework, and began to develop 'Future World Images' of the global challenges towards 2035 with respect to access of energy and mineral resources in order to assist the modeling part of Polinares.

Clingendael Asia studies (CAS)

In 2006, the Clingendael Institute launched a three-year project on Asia, financed by the Dutch Ministry of Foreign Affairs. This project promotes academic and public discussion on various topics, such as the East Asian political economy, security issues and energy-related matters. All programmes of the Clingendael Institute participate with sub-projects in the Clingendael Asia Studies project. The project was extended in 2009 to run until the end 2011. CIEP contributed to the project with studies and activities on the geopolitical consequences of China's foreign energy policy, the possible diversification of Russian oil and gas supplies towards East Asia, and China's energy cooperation with Central Asia countries. In addition, the Chinese policies on clean energy technologies in the light of the Post-Copenhagen climate negotiations were analysed.

Nuclear Renaissance

Recently, a nuclear renaissance seems to emerge, not only in the Netherlands, but also in other countries. The Ministry of Economic Affairs commissioned CIEP to explore the potential re-emergence of nuclear in the fuel mix of countries. In the essay, 'Kernenergie: een internationale beleidsverkenning' (<http://www.clingendael.nl/ciep/publications/energy-papers/?id=7943&&type=summary>), both global developments and those in specific countries and/or regions are discussed. Interest in new nuclear capacity has grown in North America, Russia, Asia (China, India), surprisingly also in OPEC countries, and in the EU (Germany, Finland, Italy, France, the Netherlands, the United Kingdom and Sweden). However, a significant contribution from nuclear energy in the transition towards a low-carbon energy mix will probably not emerge before the 2030s, as public acceptance is still a critical and politically determining factor.

International Energy Forum- 20 Year anniversary project

In the summer of 2010, CIEP together with Bassam Fattouh of the Oxford Institute for Energy Studies was commissioned to write a book about the history of the Producer-Consumer Dialogue to commemorate the twentieth anniversary of the dialogue. The dialogue started in 1991 in Paris with informal discussions. These were continued throughout the 1990s on a bi-yearly basis. The dialogue gained more traction when it was renamed the International Energy Forum in 2000 and participating countries decided to establish a Secretariat in Riyadh. In 2010, at the meeting of energy ministers, it was decided that IEF needed a Charter to give the dialogue more institutional substance. The Charter will be signed on 22 February 2011 in an extra-ordinary ministerial meeting in Riyadh, also celebrating the 20th anniversary. The book will be made available as part of the 20th anniversary celebrations.

The book is available at the IEF website (www.ief.org) but also at: <http://www.clingendael.nl/ciep/publications/?id=8406&&type=summary>.

Energy Governance Project

In the Summer of 2010, CIEP was commissioned to prepare a study on International Energy Governance and the role of the Netherlands for the Dutch Ministry of Economic Affairs, Agriculture and Innovation (ELI). The title of the study is: "Het Internationale energiebestuurssysteem; Hoe navigeert Nederland naar betaalbaar duurzaam- en voorzieningszekerheid in een onzekere wereld?". New organisations come to the fore and other fuels than oil increasingly find themselves at the top of the international agenda. This

research project runs into 2011 and several meetings with ELI staff members have taken place.

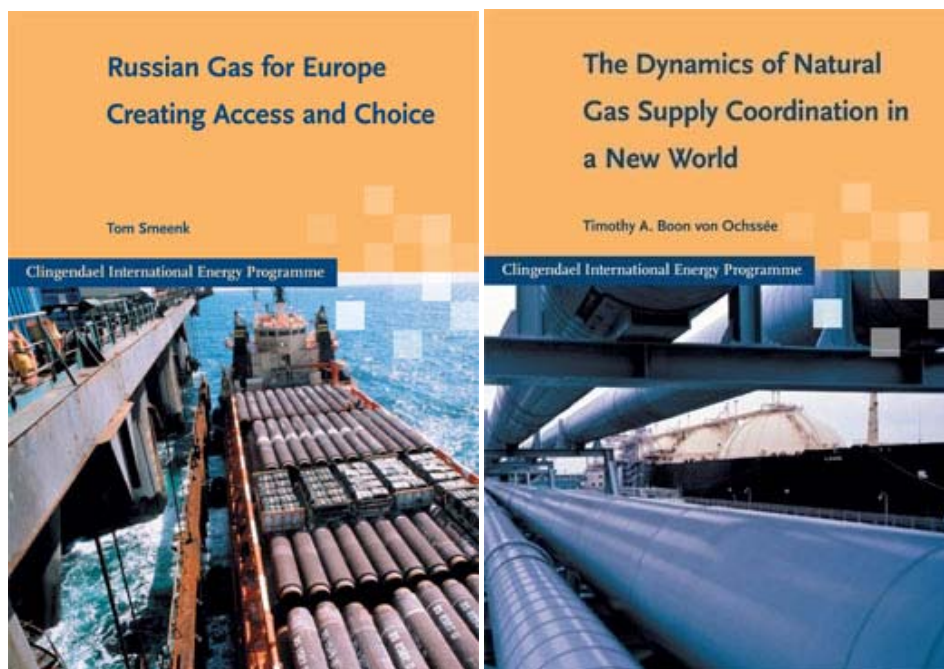
PhD activities

The two PhD projects on Russian natural gas developments were supported by CIEP and co-supervised by Prof.dr. Coby van der Linde were finalised in 2010. Timothy Boon von Ochssée and Tom Smeenk defended their dissertation at the University of Groningen in July 2010.

‘The Dynamics of Gas Supply Coordination in a New World’ by Timothy Boon von Ochssée deals with the boundary solutions to gas supply coordination between gas-exporting countries from a Russian perspective in light of the post-Cold War geopolitical context. The research is closely related to Tom Smeenk's ‘Russian Gas for Europe: Creating Access and Choice’. This study deals with Gazprom's investment strategy regarding Russia's gas exports and export market behaviour, with a focus on European infrastructure projects and given the geopolitical context.

Both studies can be downloaded from the CIEP website:

<http://www.clingendael.nl/ciep/publications/energy-publications/?id=8038&&type=summary>
<http://www.clingendael.nl/ciep/publications/energy-publications/?id=8039&&type=summary>



EDGaR - Energy Delta Gas Research Programme

<http://www.edgar-program.com/>

The EDGaR programme focuses on positioning the Dutch natural gas sector in an international perspective and, from this position, on achieving a sustainable energy supply. EDGaR's main objective is to carry out research of fundamental, strategic and technological

importance for gas. CIEP participates with the Delft University of Technology (Section Economics of Infrastructures, Faculty Technology, Policy and Management) and the Policy Studies unit of Energy Research Centre of the Netherlands (ECN) part of the work programme, which is titled: 'Up Stream – Down stream: Securing gas supply and demand and the governance of the gas value chain' Project leader of the Theme 'Changing gas markets' is Aad Correljé <http://www.edgar-program.com/nl/projects/A10>. Bas Percival will, at the end of February 2013, deliver a PhD thesis on some of the research produced under this theme.

World Energy Council (WEC)

CIEP traditionally hosts the Netherlands' World Energy Council (WEC NL) board meetings and one CIEP staff member (Lucia van Geuns) is a member of the board. CIEP contributed to national and European preparatory discussions and analyses on the forthcoming WEC-scenarios to 2050.

Training programmes

In 2010, CIEP organised two training days open to the general public: 'Stirring the EU Fuel Mix' (27 May 2010) and 'Energy governance in a Low-Carbon World' (4 November 2010)

In addition, one tailor-made training programme was offered: a two day workshop organized for the Diplomatic Institute to the Ministry of Foreign Affairs of the Republic of Bulgaria in Sofia (28, 29 September 2010).

CIEP staff lectured in Clingendael Institute courses, and also for the Energy Delta Institute, Groningen University and Delft University of Technology and in a series of events throughout the year (see also Appendices 3 and 4).

Knowledge Centre

An important task for CIEP is to provide the general public with information on energy related topics. This is achieved in part by CIEP's own activities and publications (available on internet), but also by presentations at conferences and other meetings and media interviews. In 2010, over 190 presentations, lectures and interviews were given by CIEP staff. Further, the CIEP website served as an important source of information on publications, activities and training programmes.

Network

CIEP is primarily a network organisation. CIEP is a small organisation and does not intend to compete with other energy oriented knowledge centres, but rather works to complement and cooperate with many of these institutions. Positioned between the private sector and public institutions, between academic research organisations and consultants, CIEP endeavours to achieve its mission and objectives via cooperation across its extensive network.

CIEP has initiated discussions between different experts across its extensive network. For example meetings between energy and environmental experts and energy and security experts have served as sounding boards for new issues in international and national energy. The various study groups and meetings with CIEP supporting institutions are also network events.

CIEP supporting institutions

In 2010 CIEP was supported by the following institutions:

- Dutch Ministry of Economic Affairs, Agriculture and Innovation (ELI)
- Energie Beheer Nederland (EBN)
- Gasunie
- Gasterra
- ING Group
- Nederlandse Aardolie Maatschappij BV (NAM)
- N.V. NUON
- Oranje-Nassau Energie BV
- Total E&P Nederland BV
- Port of Rotterdam
- Shell Nederland BV
- Dutch Ministry of Housing, Spatial Planning and the Environment (VROM)
- Vopak Oil Logistics Europe & Middle East B.V.
- Essent
- Eneco
- BP
- Wintershall
- Dutch Ministry of Foreign Affairs (BZ)
- RWE Nederland
- Esso Nederland B.V.
- Delta
- Electrabel
- Tennet TSO BV
- GDF Suez

These institutions are a cross-section of energy sector stakeholders in the Netherlands and beyond. The companies are major international players in their field of expertise. The public institutions understand that national energy policy is largely influenced by international developments. The institutions contribute to CIEP's knowledge base and *vice versa*, especially within the CIEP Advisory Board and the Contact Group. Furthermore, staff members from the institutions participated actively in CIEP research and study groups, such as the Gas Study Group, the Oil Discussion Group, the Energy mix Discussion Group.

CIEP network

Many of our activities and studies are conducted in cooperation with partner organisations in the Netherlands and abroad. Over time a wide network of researchers has developed. The intensity of contact depends on the project at hand, but in general many of the contacts continue in other projects. We are also approached to participate in consortia of researchers, and, weighing how the project would fit within the CIEP research agenda for that period, we agree to participate or not. The network of energy researchers is global, and each year new partners join the network. Some relations with research and activity partners have become very close and a variety of interactions take place every year, from keeping in touch on current issues to organising conferences and conducting joint studies.

Within the Netherlands, CIEP has working relationships with a wide variety of institutions, including among others:

- Energy Delta Institute (EDI)
- Energy research Centre of the Netherlands (ECN)
- International Institute for Asian Studies (IIAS)
- Technical University Delft (TUDelft)
- Centrum voor Energiebesparing (CE Delft)
- Netherlands Environmental Assessment Agency (PBL)
- University of Groningen (RUG)
- Algemene Energieraad (AER)

Internationally, the CIEP network spans among others the following institutions:

- The Loyola de Palacio Programme of the European University Institute
- The Fondazione Eni Enrico Mattei (FEEM)
- Wilton Park (WP)
- European Policy Centre (EPC)
- Royal Institute for International Affairs (RIIA, Chatham House)
- Oxford Institute for Energy Studies
- Institut Français des Relations Internationales (IFRI)
- DGENER (European Commission)
- International Energy Agency (IEA)
- International Energy Forum (IEF)
- Columbia University (New York)
- The Atlantic Council of the US
- World Energy Council (WEC)
- Moscow State Institute of International Relations (MGIMO)
- European Commission, Joint Research Centre, Institute for Energy

Internal organisation

CIEP administers the allocation of staff and budgets to the different public activities, research projects and other activities in a transparent way. CIEP uses time registration (BigBen software), which facilitates prioritising time and assets.

Overview

CIEP publications

The following overview highlights a selection of publications, most of which are available on the CIEP website. CIEP (associated) staff also published articles in newspapers, scientific journals and other formats that are not mentioned here.

CIEP articles/papers

Fifth follow-up: Toward A Nuclear Weapon Free World, Ruud Lubbers, Max van der Stoel, Hans van Mierlo, Frits Korthals Altes, CIEP Briefing Paper, January 2010

Energiebeleid en de Noordwest-Europese markt: Brandstofmix en infrastructuur, CIEP Energy Paper, February 2010

The rise of China: setting the alarm bells ringing?, Bram Buijs, IIAS Newsletter no 53, March 2010

Beyond Copenhagen: what role for Asia?, Bram Buijs, IIAS Newsletter no 53, March 2010

A Smart EU Energy Policy, Jacques de Jong, CIEP Misc. publication, April 2010

Kernenergie: een internationale beleidsverkenning, Jacques de Jong, CIEP Energy Paper, April 2010

Nederland schrikt weer verbaasd wakker, Luc Werring, in: Energie+ , April 2010

Energy Company strategies in the Dynamic EU energy market (1995-2007), Stijn van den Heuvel, Jacques de Jong en Coby van der Linde, CIEP Energy Paper , May 2010

Het Midden-Oosten in de wurggreep van energie-investeringen, Lucia van Geuns, in: Christen Democratische Verkenningen, July 2010

Three Observations on Global Energy and Climate, A Post-Copenhagen Analysis, Bram Buijs, CIEP Briefing Paper, July 2010

‘The Dynamics of Gas Supply Coordination in a New World’ Timothy Boon von Ochssée, CIEP Energy publication, July 2010

‘Russian Gas for Europe: Creating Access and Choice’, Tom Smeenk, CIEP Energy publication, July 2010

The Evolving Role of LNG in the Gas Market, Dick de Jong, Coby van der Linde en Tom Smeenk in: Global Energy Governance: The New Rules of the Game. Washington, Brookings Institution, August 2010

De dubbele paradox van de Iraanse energiesector, Hans Schippers en Lucia van Geuns, in: Atlantisch Perspectief 34(6) 2010, oktober 2010

CIEP columns

The 2010 columns in Energie Nederland (Energy Netherlands) are written by Coby van der Linde, Pieter Boot and Aad Correlje (<http://www.clingendael.nl/ciep/publications/columns/>).

CIEP activities

CIEP organised numerous activities (meetings, training programmes, conferences, etc.) during 2010. A listing is given below (see also <http://www.clingendael.nl/ciep/events/2010/>)

3 February 2010 – Presentation: ‘ExxonMobil Outlook for Energy’ by Mr. Todd Onderdonk
ExxonMobil Senior Energy Advisor Strategic Planning
<http://www.clingendael.nl/ciep/events/20100203/>



25 February 2010 - Presentation: ‘The US regulatory system, an inspiration for Europe? A perspective from the FERC’ <http://www.clingendael.nl/ciep/events/20100225/>



1 March 2010 – Informal lunch discussion with World Resource Institute (WRI), Ruth Greenspan Bell, Director, US Climate Policy/Senior Fellow

16 March 2010 – CIEP Energy Workshop ‘The interaction between gas and electricity on system level in Northwest Europe’ <http://www.clingendael.nl/ciep/events/20100312/>

29 March 2010 – CIEP Expert roundtable on cooperation and conflict of mineral resources (POLINARES project)

26 May 2010 – CIEP Energy Seminar ‘The EU 2050 Energy challenge’
<http://www.clingendael.nl/ciep/events/20100526/>



1 June 2010 – CIEP seminar ‘De toekomst van het Nederlandse energielandschap’
<http://www.clingendael.nl/ciep/events/20100601/>

7 June 2010 – Informal lecture on “Climate Change and the securitisation of energy relations?” by Vice Admiral Dennis McGinn (ret.), CEO Remote Reality

15 June 2010 – Discussion meeting on “U.S. energy policies after Copenhagen and in the light of the oil spill in the Mexican Gulf” with Christopher Flavin, President, World Watch Institute, organised with the Institute for Environmental Security

22 June 2010 – Presentation: ‘BP Statistical Review of World Energy 2010’ Mr. Kevin Goodwin, BP Head of Refining Analysis <http://www.clingendael.nl/ciep/events/20100622/>

1 July 2010 - CIEP Oil Conference: “A decade of uncertainties: Coming to grips with new oil market realities” <http://www.clingendael.nl/ciep/events/20100701/>

6 July 2010 - Roundtable CIEP Gas Group ‘plus’: “The Caspian Development Corporation & Southern Corridors” <http://www.clingendael.nl/ciep/events/20100706/>

25 August 2010 - CIEP Seminar: “Challenges of the Netherlands’ energy policy: Developing strengths” <http://www.clingendael.nl/ciep/events/20100825/>



2 September 2010 - CIEP Gas Day 2010 <http://www.clingendael.nl/ciep/events/20100902/>

30 November 2011 - Debating Europe’s Energy & Climate Change Policies: Dinner Debate with European Parliament President Jerzy Buzek, <http://www.clingendael.nl/ciep/events/20101130/>



14 December 2010 - Presentation ‘Energy Security’ Claude Mandil, former executive director of the International Energy Agency, <http://www.clingendael.nl/ciep/events/20101214/>

Training

One day CIEP Training:

May 27, 2010 - Stirring the EU Fuel Mix

November 4, 2010 - Energy governance in a Low-Carbon World

CIEP also facilitated a two day training programme for the Diplomatic Institute to the Ministry of Foreign Affairs of the Republic of Bulgaria in Sofia (28 and 29 September 2010)

Meetings

- Boardmeeting Stichting Fonds Instituut: 17/02, 18/05, 18/11/2010
- Contact Group meetings: 9/03, 8/06, 12/10, 7/12/2010
- Advisory Board Meetings: 22/06, 14/12/2010
- Gasgroup: monthly meetings 14/1, 11/2, 8/3, 12/4, 20/5, 17/6, 14/10, 11/11, 9/12/201
- Oil group: quarterly meetings
- Fuelmix brainstorm group: 12/2, 16/4, 18/6, 10/9, 5/11/201

Lectures, Speeches and Presentations

During 2010, CIEP staff members gave a total of 130 lectures, speeches, and presentations or chaired sessions during training courses, conferences and seminars (a selection of the external lectures are listed in Appendices 3 and 4)

Media

CIEP staff members gave over 70 interviews for radio, television and newspapers during 2010.

Website

All publications and/or reports of CIEP (associated) staff can be found at <http://www.clingendael.nl/ciep/publications> . Internet is an important communication tool for CIEP. In 2010, the Clingendael site recorded approx. 11 Million successful hits. Pdf's of CIEP publications were frequently downloaded. Estimations indicate that CIEP publications were successfully found approx. 365.000 times. As last year, the most popular page was <http://www.clingendael.nl/ciep/publications/>.

Staff

In 2010, the CIEP staff comprised the following people:

Coby van der Linde	director	(0.7fte)
Lucia van Geuns	senior researcher/deputy	(0.8fte)
Christof van Agt	senior researcher	(1.0 fte)
Nora Meray	senior researcher	(0.8 fte)
Bram Buijs	researcher	(1.0 fte)
Leonie Meulman	researcher	(1.0 fte)
Jochem Meijknecht	researcher	(1.0 fte) (0.8 fte since 09-2010)
Tom Smeenk	researcher	(1.0 fte) (until 01-10-2010)
Tim Boon von Ochssee	researcher	(1.0 fte) (until 01-10-2010)
Wendy Auf dem Brinke	secretary	(0,7fte)
Marco Blankestijn	fin. administrator	(0.2fte)

In addition to the core staff, CIEP has four fellows and three associate fellows:

Jacques de Jong	senior research fellow	(0.4 fte) (from 01-05-2010)
Dick de Jong	senior research fellow	(0.2 fte)
Luc Werring	senior research fellow	(project basis)
Pieter Boot	senior research fellow	(0.2 fte) (until 01-03-2010)
Aad Correljé	associate fellow	(0.2 fte)
Reinaldo Figueredo	associate fellow	(project basis)
Dirk Bensdorp	associate fellow	(project basis)

During 2010, the following students were connected for at least part of the year to CIEP staff:

Bas Percival	PhD candidate (EDGaR project)
Sebastian Korteweg	student intern
Irina Mironova	student intern

Other functions held by CIEP staff members:

Coby van der Linde	Part-time Professor of Geopolitics and Energy Management, University of Groningen Member of the Dutch Energy Council Member of the Supervisory Board of Wintershall Nederland B.V. (WINL) Member of the Supervisory Board of Alliander Member of the international advisory board of KAPSARC (King Abdullah Petroleum Study and Research Center) Member council of Rotterdam Climate Initiative (RCI)
Lucia van Geuns	Member of the board of the World Energy Council Netherlands (WEC NL) Member of the Earth and Lifesciences Council (RAL) of the Royal Netherlands Academy of Arts and Sciences (KNAW)

Board of the Foundation Stichting Fonds Instituut Clingendael in 2010

Drs. G.H.B. Verberg, president

Mw M.E.R. barones de Vos van Steenwijk-Groenenveld, lic., vice-president (until 11-2010)

Drs. H.D.A. Haks RA, treasurer

Mr. W.F. Dutilh, member (until 11-2010)

Mr. W.O. Russell, member

Ir. R. Willems, member

Mw. Mr. I. L. Van Veldhuizen, member (since 11-2010)

Mw. drs A. Moons, member (since 11-2010)

Appendices

Appendix 1: About CIEP

Introduction

In September 2001, the Netherlands Institute for International Relations, 'Clingendael', launched the *Clingendael International Energy Programme* (CIEP). Supported by twelve institutions from the public and private sectors, CIEP participates in and seeks to make significant and substantive contributions to the public debates on national and international developments in the energy sector. After the initial period 2001-2004, CIEP continued largely on the same footing as the previous years based on the plan and estimated budget as described in the document *CIEP 2005-2008, Towards a European Forum* and agreed upon by the Board of Stichting Fonds Clingendael and seventeen participating institutions.

The main reasons for initiating CIEP were:

1. The need for a forum to discuss developments in the European energy markets, e.g. the liberalisation of the European energy market, which will impact the organisation of the market, government energy policies and strategies of companies operating in the energy sector. These changes in the internal European market take place against the backdrop of an expanding European Union, increased dependency on imported fossil fuels and efforts to address environmental concerns;
2. The concerns raised in public debates about security of supply and a growing import dependency, not only for European Union member states but also for other major consumer regions. These concerns will influence the policy options and choices of both consumers and producers. The political and economic developments in, for instance, the United States, Russia, the Middle East, the Caspian Sea region, and Asia, are therefore important in assessing the developments in the European energy situation.

Mission

Through research, the publication of studies, information releases (particularly through the media and internet) and the organisation of courses and training programmes, CIEP makes a fundamental contribution to the public debate on international politics and economic developments in the energy sector (oil, gas and electricity).

Objectives

- To serve as an independent forum for governments, non-governmental organisations, the business community, politics, the academic world, the media and other stakeholders or interested parties.
- To gather and develop information and knowledge about international political and economic developments in the energy sector on the basis of research, supported by a documentation system.
- To propagate information and knowledge about international political and economic developments in the energy sector by means of seminars, conferences, lectures, courses, publications and information releases via the media.
- To initiate discussions about current events and future developments relevant to the energy sector, energy policy, legislation and the relationship between the government and the private sector.

Research and activities

CIEP's research and activities focus on three main subject areas:

- A. Regulation of energy markets (oil, gas and electricity) in the European Union;
- B. International economic and geopolitical aspects of the oil and gas markets, mainly with respect to the security of oil and gas supply in the European Union, in the context of an increasing dependence on imported energy; and
- C. Energy and sustainable development.

The staff of the Clingendael International Energy Programme, in conjunction with the staff of the Institute at large, develops courses and training programmes on the above-mentioned themes. CIEP publications and research results are made available primarily through the CIEP website (www.clingendael.nl/ciep), which forms part of the Clingendael website.

Appendix 2: Work plan CIEP 2009-2012

ENERGY: BETWEEN A ROCK AND A HARD PLACE

THE GROWING MISMATCH BETWEEN LONG TERM ENERGY AND CLIMATE CHANGE VISIONS
AND SHORT TERM MARKET DEVELOPMENTS

Work plan CIEP 2009-2012

CIEP is predominantly a network organisation with a strong public dimension. The success and recognition of CIEP is based on the combination of certain qualities, such as its independence, the provision of timely analyses from an international economic and geopolitical perspective, a focus on pre-competitive knowledge and an integrated view on the three pillars of energy policy – the *environment*, *market regimes* and *security of energy supply*. This formula offers CIEP a unique position, not only in the Netherlands, but also internationally, especially within Europe.

Modes of operation

Forum

As an independent organisation, CIEP is able to function as a forum for the stakeholders in the energy sector. The forum function is shaped by the coordination of a variety of activities with participants and invitees from governmental agencies from different countries, the private sector, NGOs, scientists and representatives of supranational organisations, in which energy and climate change issues are discussed in an open and informal setting, typical for meetings under the Chatham House rule.

Representatives of different stakeholders groups also participate in CIEP research activities. The CIEP advisory board and contact group, with representatives from the supporting institutions, are an important part of the CIEP forum function. CIEP underpins sector-wide initiatives and facilitates meetings and conferences. The Forum function of CIEP in the Netherlands and EU is well established. Across Europe but also in Moscow and Washington, CIEP staff is involved in debates about a wide range of energy and related climate change issues.

Think-tank

As a think-tank on energy issues, CIEP operates from an international economic and geopolitical perspective. Research is characterised by an integrated approach to energy policy, a focus on pre-competitive issues and executed from the assumption that ‘energy is politics’. CIEP is independent in formulating its research agenda. Results from CIEP research are intended for the public domain and published accordingly on the CIEP website. CIEP conducts research according to academic standards, but its publications are aimed at public

and policy issues. CIEP also conducts research for others, as long as the work fits within the research agenda and the results can be made public. In the capacity of a think-tank, CIEP also advises government agencies, companies and NGOs. Already well-respected in the Netherlands, CIEP is also internationally recognised as a leading knowledge organisation on a wide range of energy issues ranging from security of energy supplies, market developments and geopolitics to future fuels.

Knowledge transfer

By active transfer of knowledge, CIEP works to increase public understanding of energy and to inform the quality of public debates. In addition to research outputs, other key modes of knowledge dissemination have been through the media, short courses/modules, lectures, consultations with specific focus groups, and participation in the activities of other organisations.

With our base in the Hague, it is natural that CIEP's knowledge transfer functions will maintain a strong focus on the Netherlands, but increasingly participants from elsewhere in Europe find their way to CIEP modules and finds CIEP going to elsewhere to offer short courses and presentations. Together with EDI and other partners, CIEP will be involved in a Gas Business Master's programme.

Society

CIEP staff are involved in various councils, advisory boards and panels such as the International Gas Union's Wise Person group, the Dutch energy council, the board of WEC NL, the supervisory board of Rotterdam Clinton Climate Initiative, the editorial board European Energy Review, etc.

CIEP organisation

CIEP is a project in the Stichting Fonds Clingendael, and thus financially and organisationally separate from Institute Clingendael. Stichting Fonds has its own board and governance structure. CIEP also has an Advisory board and contact members group to ensure exchange of information with participating organisations and guard the CIEP public agenda.

In content, CIEP work is related with some of the core themes of Clingendael, mostly in the geopolitical/strategic and European sphere, although Clingendael does not cover the economic approaches to these themes, which limits the overlap. In the Asia Studies programme, CIEP and Instituut Clingendael continue to cooperate in a joint project. CIEP also cooperates with other research institutions both in the Netherlands and abroad.

Research Themes and Focus in the coming period

Long term visions and short term bottlenecks

The European ambitions for a more sustainable energy system have taken shape with the Commissions proposals of 10 January 2007 (SEC) 12, 2007, and the Councils' acceptance of the main thrust of the proposals (Feb. 2007). The catchphrase '20-20-20 in 2020' (20% more energy efficiency, 20% share of sustainables in the energy mix and a 20% reduction of CO₂ emissions by 2020) reflects the Commission's ambitions to make a serious step towards a low carbon economy. These ambitions must be achieved in a European market environment, of which the contours have been further defined in the Commissions' 19 September 2007 package. At the same time, security of oil and gas supply is an important precondition for the smooth transition to a lower carbon economy. The three pillars of energy policy, price,

security and environment, must not only be integrated into one consistent policy approach but is now at the core of the proposed 'new industrial revolution'.

With the clarity on where the energy system must go in the longer term, the short and medium term problems, however, are dauntingly short of a solution. The recent publication of the IEA World Energy Outlook 2007 is more somber than it was ever before, about oil price developments, investment needs in oil and gas value chains, structure of markets, demand outpacing supply, and meeting climate targets. The emergence of new fast growing economies, such as India and China, has driven demand for fossil fuels to new heights and production has difficulty keeping up. The stresses and strains appear in all parts of the energy value chains, evidenced by both cost push and demand pull inflation. Marginal cost has increased to high levels indeed, and is expected to increase further when more marginal oils, such as from the Arctic, oil sands, oil shales, and biofuels, have to be exploited, while the pace of development of medium cost oil remains disappointing. This medium cost oil is located predominantly in OPEC countries and Russia. The income of oil producing countries is now successfully generated through the oil price rather than through selling volumes, which has increased their reluctance to invest in new production capacities. With international oil companies locked out of the medium cost oil developments by national governments, and the unlevel playing field in African developments with national companies from consumer countries such as China, only the most expensive options are left for international oil companies. Yet, these same companies are the backbone of the world oil trading system, offering their oil to the highest bidder.

At the same time, many consumers are shielded from the price developments through government subsidies, fueling demand growth in the producing countries and China. The large monetary surpluses of these countries, in oil producing countries due to the transfer of wealth as a result of higher oil prices and in China by hoarding labor productivity gains at the government/state level, imply that these countries can subsidise energy for some time to come. They command their share of resources, using both international markets and bilateral agreements to realize this. Simultaneously, oil fields are being developed with the articulated intention of generating a bilateral oil flow, rather than a flow destined for world markets, undermining the global oil trade system. The oil trade system could, if more oil is diverted away from world markets into two parallel systems, where price is no longer the only tool of distributing scarcity. Instead (geo)politics can develop into a separate tool of distribution. There is one source of new oil production that can change the current rules of the game; Iraq. Iraq has large onshore medium cost oil reserves that have not been exploited intensely. Production could increase with another 4-6 mb/d with the proper investment climate and in a situation of political stability. For the global oil market, and thus the OECD countries that are wedded to the availability of oil through the world oil trading system, it is increasingly important that this lower cost Iraqi oil becomes available in order to buy some more time to fend off the worst effects of the supply-constrained world. The political situation is however not promising. Neighbouring countries will be reluctant to share the oil income pie, particularly not when they are set on a course of further divorcing cost of production and price.

It is obvious that the transition to a less carbon intense economy is going to be far from smooth. The dilemma of course is that transiting to a different energy system can only be pursued under a certain strain of scarcity and/or geopolitical constraints, otherwise incentives to change are limited. Furthermore, solutions to one problem can easily bring forth new ones,

evidenced by the current expansion of biomass production that clashes with the stock of nature and food production.

The new but alarming tone of the IEA started with its 2005 publication, and since then the worries have increased to the point where the earlier staunch belief that markets could resolve any concerns about climate and security has been traded for a mixed approach where government intervention has gained ground. This intervention should focus on disciplining the energy system into a more efficient and low carbon direction. Yet, at the same time, the ongoing concentration of oil and gas supplies, triggers countries into favouring coal and nuclear for electricity generation for security of supply reasons. In order to meet climate policy goals, coal must be revolutionised into 'clean coal' through the rapid development of sequestration technologies, while the thin border between nuclear energy for civic and strategic use causes concerns with more countries seeking a solution for their rising electricity demand in this direction.

In the past decade, the oil and gas markets have changed from a buyers' to a sellers' market. In the past, the outlook was that eventually this process would be reversed, as happened from the mid-1980s onward and that the boom-bust cycles would continue to repeat themselves. In this thinking, the current sellers' market would in time be reversed into a buyers' market. The issue is that the price level at which the next fossil fuel buyers market might occur, is deemed to be much higher than in previous decades due to a more structural shift in costs and demand. For a complexity of reasons, geological, technical, economic and political, the consensus is now that structural supply constraints have brought the era of cheap fossil energy to an end. With traditional fossil fuel costs rising and costs of new fuels not declining fast enough (both a function of technology and the availability of the new fuels), the short and mid term outlook leaves the world with dearer energy, and no guarantee that bottlenecks in both the traditional energy markets and the new energy markets can easily be solved.

On the one hand, dearer fossil energy will reduce the cost between the 'old' and 'new' fuels and lowers the transition threshold to a low carbon economy, while on the other hand, the risks of mismatches in timing of replacing fuels and its infrastructure increase the risk of a transition crisis and the subsequent suboptimal solutions that might be pursued. The terms of availability of energy, including ownership issues, market structure, national interests, in an ever growing international market will be an important factor in shaping the future geopolitical and economic relations because energy is also power in geo-economic and geopolitical terms. Already we are witnessing more bilateral relations between producer and consumer countries in an attempt to reduce uncertainty of demand and supply. Also in the market, joint-ventures between NOC's and IOC's reflect the new organisation structure, where both national and commercial interest are newly bundled. The new structure will bring new winners and losers and is by no means a guarantee for a peaceful but competitive change to a next generation energy system. When the distribution of military power, economic power, political power and energy power is in flux, conflicts can easily derail the likelihood of an evolutionary transition.

Markets and governments

The maturity of the OECD conventional oil and gas reserves seriously undermine the options for diversification away from certain producer countries (for reasons of politically and economically instability or geopolitical reasons), while climate change policies reduce the options to diversify to coal and unconventional oil, unless larger scale carbon storage can be realised soon at reasonable costs and with manageable risks.

Yet, the path to the realisation of the low carbon economy is still long and fraught with both internal and external political and economic dilemmas. Governments and companies in the OECD will struggle with:

- the short term nature of energy markets and the longer term process of balanced change (as opposed to change as a result of a crisis) in the fuel mix;
- economic efficiency in a world market where public interests such as environmental and security externalities are not or not sufficiently priced in;
- national optimisation of energy production (f.i. depletion policies, macro-economic stability, etc.) and consumption viz. international optimisation;
- variations in prioritising public interests among countries, including among the EU member states;
- fossil energy intense development viz. sustainable development;
- rent-seeking behaviour in the fossil and sustainable energy value chain by both private companies and governments;
- competition for scarce resources viz. cooperation;
- energy diplomacy and the growing importance of energy (and water) on the foreign and security agenda;
- public viz. private ownership of the energy value chain;
- bilateral or multilateral energy markets or politicised viz. economised markets;
- structural import dependence viz. structural energy income dependence;
- negotiated climate change policies or race to the top type of policies;
- etc.

These dilemmas and others will occupy policy-makers and company managers in the next years in a world where the balance of power in the world is shifting and where national and international public interests will be redefined. The outcome of this struggle between national and international energy interests is uncertain. Already, some states have decided to take firmer control over their energy industries in an attempt to merge the political and economic interests of the state in energy, while other states attempt to break up the power of companies through regulatory controls.

The combination of long term goals for structural change of the (energy) economy on the one hand, and more emphasis on short term efficiency in the market environment is both a theoretical and practical challenge. The protection of the environment and security of supply policies are public interests that, when pursued, complicate the organisation of already incomplete (international) markets for energy. Bottlenecks in capital allocation, long lead times, the long life of infrastructure and production sites, locked-in fuel choices, but also foreign policy and market organisation orientations and high barriers to entry and exit impact on the completeness of the market for energy. But energy is also about power, the political-strategic and economic position in the world system. States without access to energy cannot develop into modern economies, nor into powerful geostrategic players. The energy sector, because it is a basic input in our economy, has always been a mixed sector where economic and political interests convene. The low carbon economy is both about genuine concerns about the impact of CO₂ missions on the world climate system and about the reduction of structural import dependency, but it is also about getting the better of rival states. Political competition is concerned with a different type of efficiency than market efficiency, and market efficiency is less concerned with long term environmental efficiency. In addition, there is also a struggle among consumer countries for scarce energy resources. Already we see

the emergence of a bilateral or national economy driven trade and investment system that could lower the liquidity of world oil markets.

As much as governments are challenged to safeguard the public goods, environment and energy security, companies will be challenged to internalise the changing political and economic context of energy and the environment, and transform these in commercially attractive company strategies and products. Much will depend on the governments' ability to define the market space and ability to create, amidst change, sufficient investor certainty to invest. The dilemma for existing companies is to respond to both the short term demands of capital markets (and activist investors) and the long term government demands of moving into a low carbon economy. OECD governments will employ a mixture of incentive based policies with increasing norms for energy and environmental efficiency. It is unclear whether these norms and incentives can and will be implemented throughout the various energy value chains. This depends on the level of consensus and cooperation (or the lack thereof) in the international political arena. At the same time, companies are bound by policies of their host governments (and their specific national interests and position in the balance of power) and international competition. It is likely that boundaries between certain sectors of the economy will fade (in agriculture for instance) and that new competitors will encroach on the vested interests of traditional energy companies. Loosening the ties between natural endowment and fuels of choice can change the distribution of rents among companies and governments. Both companies and governments are not only addicted to oil and gas but also to the economic rents that they can capture. It is yet uncertain if the new fuels will be as attractive from a rent-seeking point of view.

The changing market structure of oil and gas markets, both as a result of demand from emerging economies and new economic and energy strategies of governments, will greatly impact the organisation of the energy sector and its players. Consolidation, mergers and acquisitions, break ups of traditional companies and reorganising them in a different setting in the value chain belong to a period of structural market change. Companies will face many dilemmas of which the current dilemma of access to energy resources and markets is but one. The biggest challenge for existing companies will be to select fuels, technologies and government alliances.

Challenges to the CIEP agenda for 2009-2012

The challenge for CIEP will be to understand the underlying political and economic forces that shape the future government and company strategies. The three themes of research (European energy markets; security of supply and sustainable development) offer sufficient legroom to be the foundation for another period of research and activities under these headings. Like in the previous periods, shifts in emphasis within these three themes on a year to year basis have allowed CIEP to both develop a broad knowledge base as well as an ability to change gear within and between themes. In the coming period, we expect to be involved in fuel mix choice discussions, forcing us to include more research on coal and nuclear, but also on biomass, in addition to oil and gas. We also expect that energy trading routes will become more important and that policy orientations of major consuming and producing countries will shape both the energy debate and the environmental negotiations. The work on Europe, Russia, China, other Asian countries, the Caspian Sea region, the Middle East and increasingly the US, will be expanded to include developments in Africa and South America.

In the period 2009-2012, new international climate negotiations but also supply constraints will shape the debates and policies. The market structure will have undergone profound

changes as the rate of reserve replacement of international oil and gas companies and market access of national companies will impact the strategies. CIEP should therefore not only focus on the changing context of energy markets and government policies but also invest in understanding company strategies. The aim is thus to develop a more complete understanding of the developments in the international energy and environment sector.

Research Themes

Theme A Development of European Energy Markets

The European Union has been involved in a long process of liberalisation (and privatisation). Liberalisation was, however, not the panacea to solve all the energy policymakers problems, such as the public interests security of supply and environmental problems. The switch from a buyers to a sellers market challenged the political promise of policy makers that energy prices would decline as a result efficiency gains. Moreover, the regulatory burden and the cost of organisational change pushed these gains elsewhere in the economy, while investor uncertainty resulted in bottlenecks in the system. Also, although many risks were privatised to the level of the consumer, information and instruments to reduce these risks are wanting, creating a backlash in some countries to not 'go the whole nine yards' in liberalisation and instead promote national champions to improve the negotiation position with large third country transport and supplier companies. Despite the much heralded advantages of liberalisation, it was also clear that governments could never leave fuel choice to the market alone, nor to the Commission as evidenced by the Chairman's conclusions of March 2006, if they were serious about their environmental and other policies. The 20-20-20 policy the European Commission is advocating has a profound impact on the market space and available companies choices, while the nascent external energy policy has impacted the energy relationship with Russia and other producers.

CIEP will focus both on the development of the internal energy market, and increasingly also the markets for alternative fuels, also in the context of world markets.

B. The international economic and geopolitical aspects of energy markets, mainly with respect to the security of energy supply in the European Union, in the context of an increasing dependence on imported energy.

In the next 25 years, the import dependency of the European Union will continue to increase, while at the same time the supply of oil and gas on the international market will become more concentrated. There will be similar developments in the United States and Asia. Competition for oil and gas will intensify, with consequences for the political and economic relations with these regions. The long term goal of moving away from fossil fuels (and their import dependency), and the short term supply bottlenecks and higher prices will seriously challenge the security of supply agenda.

Security of energy supply is increasingly becoming an integral part of the foreign policy agenda, also in the EU, although development of these policies (and external energy policy) is excruciatingly slow. The member states have difficulty coping with their asymmetric exposure to security of oil and gas supply risks, and are pursuing their own national policies. The policy toolbox of the EU and the individual member states remains incomplete to deal with the new challenges, such as instability in key producing regions and competition for resources with main consumer countries. Europe's soft power is often trumped by countries such as China. Furthermore, the existence of asymmetric risks may require a much more

regionalised tailor-made response, which could run counter to the attempts of the Commission to develop common tools and one market.

In a supply-constrained world, policy competition and strategic relations can easily undermine the current international trade and investment system. Geopolitical and geo-economic competition to divide international wealth and the resources to produce this wealth pose a challenge to the organization of the international system. CIEP's research on security of energy supply can be best posed in terms of the recently published Shell scenarios: can the world opt for Blueprint or does the world of Blueprint either run through Scramble or is unattainable in the current international setting? This question also ties in the third research theme, the low carbon economy.

Theme C: Towards a Low-Carbon Economy

Alarming UNFCCC reports, Al Gore's film "An Inconvenient Truth", Hurricane Katrina: these are just a few examples of the many events that have recently drawn the world's attention to the dangers and urgency of the climate change problem. The present fossil fuel-based global energy sector, with its large CO₂ emissions, is one of the key identified causes of global warming. There is a growing international consensus, particularly among OECD countries, that a transition to a low-carbon energy sector within several decades is imperative, if only to make room for Asia's economic development. This insight is also fraught with diverging interests, because economic wealth also generates international political power, and leadership and/or persuasion power is lacking to move the world into a more sustainable direction.

CIEP is not involved with climate change science as such, but rather aims to examine the international political and economic drivers, or the lack thereof, and consequences of the envisaged global energy transition. Questions relevant to CIEP's research into energy transition are, for instance: What does a low-carbon energy transition mean for international relations with and between oil and gas producing countries? What are the links between countries' negotiating positions on climate change issues and the structures of their energy sectors and how will the development of new energy technologies in the fields of renewables and energy efficiency affect existing energy relations between countries?

There is much more to the question of energy transition than climate change alone. At present and predicted future energy demand levels, the eventual depletion of fossil fuels is certain. Nevertheless, its exact timing and international consequences are still being heavily debated. How many new reserves will be found? Will global demand for energy continue to grow? Will the depletion of fossil fuels coincide with international climate change measures or not, and how will this affect international relations, for instance with main energy producing countries or with competing consuming countries, or how will it impact the current trade and investment system? These questions, as well, are relevant to CIEP's research into a global energy transition.

Appendix 3: 2010 external lectures by CIEP Staff

Christof van Agt:

27 January 2010

Centraal-Aziatische energievoorraden

bezien vanuit marktoogpunt

Presentation, Het Nationale Gasplatform, WTC, Rotterdam

22 February 2010

Expert Meeting on European Energy Policy

Discussant in Lunch and debating session hosted by EP President Jerzy Buzek, EP, Brussels

23 February 2010

Storylines: Geopolitics and Energy

Presentation, Energy Foresight Network, Representation of the Land Brandenburg to the EU, Brussels

30 March 2010

Oekraïne: schakelland tussen Oost en West

Presentation, Ministry of Foreign Affairs of the Netherlands, The Hague

3-5 May 2010

The Importance of Eurasia in the Global Energy Security Agenda

Presentation, OSCE Conference on Eurasian Energy Security, Ashgabat

3-4 June 2010

European Gas 2010 and Key Issues Going Forward

Presentation, U.S. State Department, Vienna

21-22 June 2010

World Energy Outlook & European Energy Policy

Lecture, Energy Delta Institute, Sophia

29 June 2010

Corporate Energy Strategy

Presentation, Statoil EU Offices, Brussels

16 September 2010

Energy Politics for Russian Managers

Course, President's Programme Nyenrode University, The Hague

7 October 2010

Caspian Oil and Gas Perspectives

Chair and moderation, Navingo Offshore Oil & gas Conference, Den Helder

13 October 2010

Caspian Energy and the Southern Corridor

Presentation, European Policy Centre Roundtable, Brussels

29 October 2010

European Energy Security

Lecture, Security Conference The Hague Academic Coalition, The Hague

8-10 November 2010

Looking beyond the crisis – Intelligent energy

investment as a key to successful EU energy policy

Presentation, Institute for Eastern Studies 5th Energy Forum, Sopot

6-7 December 2010

Shapes & sounds: the Lisbon Treaty and the external dimension of EU energy policy

Presentation, Institute for Energy & Finance Wien Group Meeting, Kiev

10 December

International Energy Policy

Course Delft Toptech Master of Business in Energy Systems, The Hague

Bram Buijs:

3 March 2010

China, Copenhagen and Beyond

RSM STAR Business in Asia Seminar, Erasmus University, Rotterdam

7 May 2010

China, the EU and sustainable energy

Conference "China, the EU and the Restructuring of Global Governance", Madariaga - College of Europe Foundation, Brussels

21 May 2010

China beyond Copenhagen: energy and climate change policy

IEFE/Bocconi University, Milan

13 September 2010

The Chinese energy revolution

Vereniging van Milieuprofessionals (VVM), KIVI NIRIA, The Hague

26 November 2010

China's role in the climate negotiations and the G77

China – Rising Powers workshop, IDS Sussex

Aad Corelje

27 Januari 2010

presentation op de juiste weg naar de Gasrotonde?

Nationale Gasplatform 2010, IIR Energy, WTC Rotterdam

13 April 2010

presentation Gas rotonde, rond point, roundabout, kreisverkehr, Suez/Gas de France, Gebouw aan het IJ, Amsterdam

15 september 2010

presentation Kansen Gasopslag NW Europa in een veranderende markt. Conferentie Gasopslag 2010, IIR Energy, WTC Rotterdam

30 oktober 2010

presentation Energy Regulation: Facts, Figures and Fictions, Ernst & Young Energygroup, Amsterdam.

7 december 2010

presentation Dutch energy policy: Which priorities for renewable energy? 6th Energy Economics Policy Seminar, Den Haag.

Lucia van Geuns:

5 March 2010

College TU Eindhoven: Energie en veiligheid Eindhoven

20 April 2010

Lezing voor Sustainability event: 'de mondiale strijd om energie' TUDelft

26 April 2010

Discussant presentation Michael Klare
Min. Of Foreign Affairs, The Hague

26 April 2010

presentation: NL and Oil, Rathenau workshop, NWO, The Hague

17 May 2010

presentation 'Sino-Africa energy relations'
BICCS workshop, Brussels

8 June 2010

Presentation De mondiale strijd om energie,
Electrabel seminar, Putten

16 August 2010

college for 3rd Int. Summerschool on EU Sust.
Development, Otzenhausen (Germany)

28, 29 September 2010

2 days EU Energy course Diplomatic Institute,
Sofia, Bulgaria

30 September 2010

presentation Conferentie RSM 'Einde aan de olie',
Rotterdam

7 October 2010

presentation 'Arctic E&P', Navingo Offshore Oil &
Gas Conference, Den Helder

11 October 2010

College voor Offshore Engineering, TUDelft
Delft

14 October 2010

Presentation 'Unconventional Gas', DOT
symposium 'Gas: from Flare to Favourite' TUDelft,
Delft

14 October 2010

Presentation 'International Oil markets', Shell EP
learning event, Assen

18 October 2010

Presentation 'Unconventional Oil and Gas',
Energie bezinningsgroep, Utrecht

3 November 2010

Presentation 'International gas markets', Essent
event, Amerongen

8 November 2010

GCSP: training course Security and Energy
Geneva, Switzerland

11 November 2010

Presentation 'International Energy markets',
SIB/VN seminar, Univ. Leiden

Jacques de Jong

Lectures Florence School of Regulation, Florence:

22.03 FSR Regulatory Training; State of the
Internal EU Gas Market

18.06 FSR Sustainability workshop; Energy &
Sustainability, the new world

28.06 FSR Summer School; Restructuring the EU
energy industry

25.10 FSR Regulatory training; Restructuring the
EU energy industry

Lectures ERRA/Inogate programs:

15/16.06 Istanbul, Inogate training; EU energy
infrastructures and the Dutch experience

15/16.06 Istanbul, ERRA New Commissioners
training: lectures on EU energy markets, on supply
security and on infrastructures

15.07 Budapest, ERRA Summer School, lectures
on EU energy market

Eneco Environmental Dinners:

29-03 Energie en duurzaamheid, het macro-
perspectief

18.11 Energie en klimaat, de grote uitdagingen

10 February 2010
Elektriciteit en Infrastructuur; provincie
Groningen.

25 February 2010
Schaarste en Transitie; Den Haag, Buitenlandse
Zaken

17 March 2010
Brandstofmix en infrastructuur in de NW-EU
markt; Economische Zaken

9 April 2010
EU Regulatory framework for gas infrastructures,
Larsen/EdF colloque, Paris

26 April 2010
New EU market design for nuclear energy, JRC-IE
Petten

20 May 2010
Brandstofmix en Infrastructuur, Klankbordgroep
TenneT, Loosdrecht

10 June 2010
Actualiteiten Seminar Netten, IBC; Het vervolg.,
Nieuwegein

25 June 2010
KIVI/Niria symposium dossier kernenergie; een
internationale verkenning, Den Haag

10 October 2010
E-control & media visit NL; EU-US gas markets,
Groningen

Coby van der Linde

18 January 2010
Flame Energy Conference
Amsterdam

3 March 2010
NUON Lecture,
Amsterdam

5 March 2010
Presentation 'Energy Risk, VPRO
Amsterdam

23 March 2010
Presentatie EnergieTransitie 'Nederland in de
wereld' ,Putten

15 April 2010
Lunchlezing 'Vira', Brussel

28 April 2010
College Leidse Master European Union Studies
Leiden

12 – 14 May 2010
IGU Taskforce, Toronto

19 May 2010
Lecture IEA, Brussel

20 May 2010
Energy Delta, St Michelsgestel

1 June 2010
Havenbedrijf Rotterdam, 'Rotterdam Energy Port
2010 'Energie-aanbod Rotterdamse haven:
futureproof?', Rotterdam

15 September 2010
Gas Seminar, Brussel

23 September 2010
Nogepa, Den Haag

30 September 2010
High Level Conference European Commission
Brussels

1 October 2010
EBF (economische en bedrijfskundige
faculteitsvereniging), Groningen

26 October 2010
Gastcollege Defensie, 't Harde

2 November 2010
EU Policy Seminar 'Towards a comprehensive EU-
policy', Vlaardingen

11 November
EDI, Natural Gas Strategy course
Groningen

18 November
Wintershall, SPE Symposium
Rotterdam

18 November
European Commission Energy Conference
Amsterdam

22-24 November
IGU, Taipei

29 November-1 December 2010
IGU Qatar

2+3 December 2010
Colombia University 'European Gas Scenario's
2030

Luc Werring

19 April 2010
Rotterdam climate Initiative Advisory Council,
Rotterdam

30 Juni 2010
Lecture: EU energy policy en ETS, PBL, Bilthoven

7 July 2010
presentation EU energy policy (en invloed op
nederlands beleid), Energieraad, The Hague

15 September 2010
Contribution to gas seminar in the European
Parlement parlement, Brussel

Appendix 4: Energy lectures by CIEP staff for Clingendael courses

20 January, 15 February 2010
Leergang Topmanagement Defensie
Coby van der Linde, Lucia van Geuns

8 February, 8 September 2010
Jnr diplomaten East Europe (CDSEE6)
Lucia van Geuns, Christof van Agt, Jacques de jong

9 February 2010
EWPPP training Albania
Christof van Agt

17 February 2010
Leergang diplomates Algeria
Lucia van Geuns, Christof van Agt

10 March 2019
Leergang Diplomaten Tunesie
Lucia van Geuns

25 March 2010
Masterclass Internationale Betrekkingen, R'dam
Lucia van Geuns

25 March 2010
Cursus Internationale Veiligheid (CIV)
Lucia van Geuns

6 April 2010
Leergang Diplomaten Indonesie
Christof van Agt, Bram Buijs

26 April 2010
NOS leergang
Coby van der Linde

2 May 2010
Cursus diplomaten Pakistan, Bangladesh
Lucia van Geuns, Christof van Agt

27 May 2010
Leergang Sudan SPLM and government
Lucia van Geuns, Christof van Agt

5 July 2010
Leergang Diplomaten Indonesie
Lucia van Geuns, Christof van Agt

21 September 2010
Mid career diplomates/c.servants S. Sudan
Lucia van Geuns, Christof van Agt

30 September 2009
Hogere Defensie Vorming
Lucia van Geuns

4 October 2010
Leergang diplomaten Jordan
Lucia van Geuns, Christof van Agt

8 October 2010
Mid career diplomaten Indonesie
Christof van Agt

18 October 2010
Leergang Buitenlandse Betrekkingen
Lucia van Geuns

22 October 2010
Cursus Internationale Veiligheid CIV&IVS/IDL
Lucia van Geuns

25,29 October 2010
Diplomates China
Lucia van Geuns, Bram Buijs

19 November 2010
Leergang diplomaten C. Asia , Mongolia
Christof van Agt

23 November 2010
Cursus Internationale politiek
Jacques de Jong

1 december 2010
HOVO lecture Clingendael
Jochem Meyknecht

1 December 2010
Energy and international policy on climate change
Training seminar ASEAN diplomats
Bram Buijs

