

CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME

ANNUAL REPORT 2011





Clingendael International Energy Programme (CIEP)

Affiliated to the Netherlands Institute of International Relations 'Clingendael', CIEP is 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 (EL&I), 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, Shell Nederland, Total E&P Nederland, the Dutch Ministry of Infrastructure and Environment (I&M), Tennet TSO B.V., Vopak, Wintershall, Delta, Electrabel, and Esso Nederland.

CIEP publications and research results are made available primarily through the CIEP website: www.clingendael.nl/ciep.

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Introduction: Age of Paradox

Politics and policies

The year 2011 was again an exiting year for the world of energy. Oil prices averaged above \$100 per barrel despite the poor economy in the US and Europe. Robust economic growth and oil demand in emerging economies, mainly Asia, propelled prices to a higher level than the year before, but also political events drove oil prices up. The Arab Spring contributed to increased uncertainty about supply levels when one country after the other was confronted with protests and calls for change. Although other producing countries compensated for the loss of Libyan supply and the IEA approved a strategic stock release in July, the oil price remained high. The change in the crude oil supply mix, nevertheless, impacted many refineries, particularly in southern Europe. At the same time, North American natural gas prices began slipping due to weak demand and ample supplies from shale production. Due to infrastructure bottlenecks in Cushing, Oklahoma, the American oil price WTI partly disconnected from world oil prices, resulting in cheaper energy for the weak American economy. The impact on world oil and gas prices of the North American energy boom would have been different if in March Japan had not been struck by an earthquake and tsunami, destroying the Fukushima nuclear facilities. Apart from the additional oil and gas demand to compensate for the lost nuclear power capacity, the nuclear industry's future came into question at a moment when its renaissance was about to happen. In Germany, the government decided to close seven nuclear plants and to phase out the rest by 2021, reversing an earlier decision to allow them to maintain operating longer. Instead, national legislation was passed to impose decarbonisation of the German energy sector ahead of policy making in the EU.

In the EU, work started on the 2050 energy roadmap, opening the discussion about post-2020 decarbonisation policies and the implications for the internal market. The current decarbonisation policies show that national policymaking is jeopardising the internal market and creating new inefficiencies. Moreover, the Eurocrisis is seriously undermining the ability of many European governments to continue their engagement in decarbonisation policy competition. Battered consumers may not be able to carry the cost in all the member states, jeopardising the efforts. The economic frailty is also impacting on traditional energy sectors. Companies with oil indexed long-term take-or-pay gas contracts are suffering in markets where the merit order pushes out gas first due to high oilprices. The result is that more wind energy in the system is less efficient in CO₂ reduction terms than anticipated because coal power stations can competitively satisfy demand for electricity, rather than natural gas power stations. Oil refiners are suffering very slim margins, and the nuclear industry finds it difficult to find financing under the new circumstances. Infrastructure to accommodate the new internal and external energy flows remains problematic, while dislocations due to different support schemes remains rampant.

Indeed, 2011 was not a dull year

The *CIEP agenda* reflected the dynamics of the energy sector. Apart from covering the various topical issues, 2011 was also a year of reflection for CIEP. Celebrating our ten-year anniversary made us look back and forward a decade, showing the often paradoxical developments in markets and policies. In December 2011 CIEP published 'Age of Paradox', revealing insights from ten years of CIEP publications, brainstorm discussions and gatherings, while also identifying main trends in world energy for the current decade.

The year started off with a high level gathering focussing on the French-Dutch energy relations and strategies. Issues in the Northwest European energy market developments and policy making were a recurring theme, culminating in a large conference on long-term energy policy making in the countries around the North Sea on 17 November with senior policy makers and company officials and several publications. The impact of government policies on the gas sector was also discussed during the CIEP Gas Day. Other gatherings and publications were concerned with security of gas supply, the Gas market target model and the emission-trading scheme.

The on going economic difficulties in Europe, the growth of gas supply in North America and the growth of energy demand in Asian countries is rapidly changing the relations in international energy markets. In February the International Energy Forum (IEF) published a book on the history of twenty years of producer-consumer dialogues and is a reminder of the fact that for a long time OECD and OPEC countries dominated the world energy discussion but that in the past decade this is changing fast to include other countries and other fuels than oil. A presentation on the BP Statistical Review of World Energy reflected on these changes in the energy markets, while the 2030 outlook of ExxonMobil showed how much change can be expected in the years to come.

In 2011, apart from the research work and activities done in connection to the Fuel Mix, Gas and Oil groups, two large projects reached the final stage. For the Polinares project two publications on the criticality of minerals were finished, while work on an assessment of current strategies of main players and scenarios for the future was gathering steam for delivery early in 2012. The regional roundtables on Geopolitics and natural gas for taskforce 3 of the International Gas Union (IGU) were concluded with a wrap up meeting in Paris, and after that work commenced on the final report to be presented at the World Gas Conference in 2012.



CIEP supporting institutions

In 2011 CIEP was supported by the following institutions:

- Dutch Ministry of Economic Affairs, Agriculture and Innovation (ELI)
- Energie Beheer Nederland (EBN)
- Gasunie
- Gasterra
- ING
- 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 Infrastructure and Environment (I&M)
- Vopak
- Essent
- Eneco
- Electrabel
- BP
- Wintershall
- Dutch Ministry of Foreign Affairs (BZ)
- Esso Nederland B.V.
- Delta
- Electrabel
- Tennet
- 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. National energy policy is largely influenced by European and 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 brainstorm groups, such as the Gas Group, the Oil Group, and the Fuel mix 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.

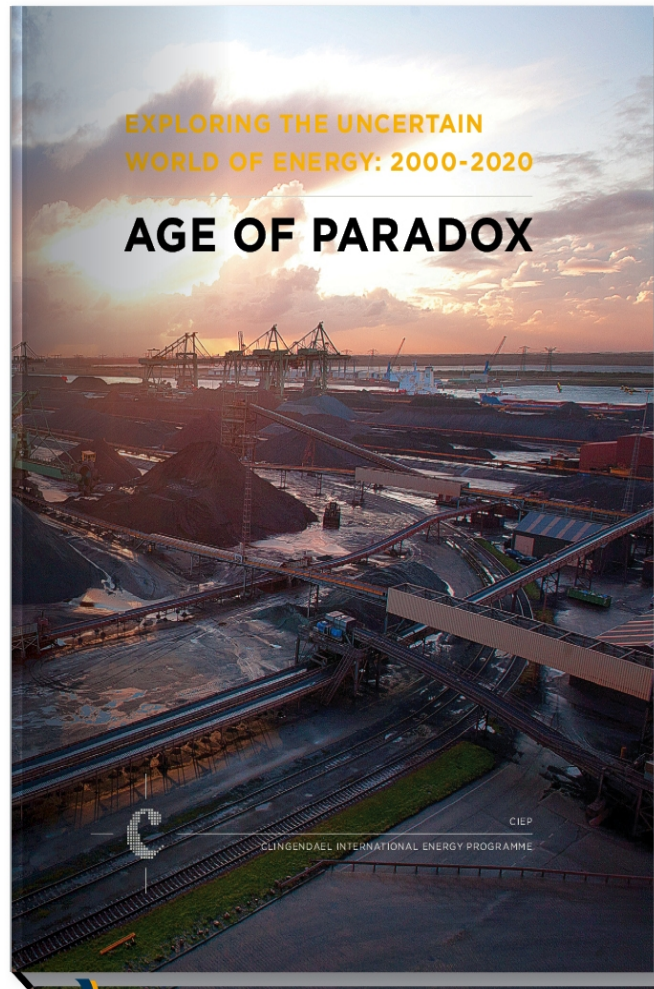
Internal organisation

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



CIEP publications

The following overview highlights a selection of 2011 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.



Articles/papers/books

Age of Paradox - Exploring the uncertain world of energy: 2000-2020, CIEP 10 year publication, December 2011

Wind and Gas, Back-up or Back-out, "That is the Question", Nora Méray CIEP Energy Paper, December 2011

Aardolie: Economisch en maatschappelijk smeermiddel voor Nederland, Jochem Meijknecht en Lucia van Geuns in: Jurgen Ganzevles, Rinie van Est (red.) Energie in 2030. Maatschappelijke keuzes van nu. Den Haag, Rathenau Instituut, 2011

Aardgas: Eén verleden en vele toekomstscenario's, Aad Correljé

in: Jurgen Ganzevles, Rinie van Est (red.) Energie in 2030. Maatschappelijke keuzes van nu. Den Haag, Rathenau Instituut, 2011

Resource Security Risks in Perspective (Summary), Bram Buijs & Henrike Sievers, CIEP Briefing Paper , November 2011

Critical Thinking about Critical Minerals (Summary), Bram Buijs & Henrike Sievers, CIEP Briefing Paper , November 2011

Buying Time: Energy and the Art of Sustainable Advancement in Transatlantic relations, Christof van Agt, in: Transatlantic 2020: A Tale of Four Futures, Ed. by Daniel Hamilton and Kurt Volker, October 2011

The energy infrastructure challenge, Christof van Agt, in: Green, safe, cheap. Where next for EU energy policy, ed. by Katinka Barysch, September 2011

CIEP Vision on the Gas Target Model (Summary), CIEP Energy Paper, August 2011

Working out new dance with Russia: the case for a Beijing-Brussels energy pact, Matthew Hulbert and Christian Brutsch, in: South China Morning Post, 19 July 2011

Het Internationale Energiebestuurssysteem: Hoe navigeert Nederland naar betaalbaar, duurzaam- en voorzieningszekerheid in een onzekere wereld? CIEP Energy Paper, June 2011

Arctisch olie en gas, Lucia van Geuns, in: Atlantisch Perspectief, May 2011

Why China Matters, Bram Buijs, in: Energy, Sustainability and the Environment, April 2011

Het dilemma van goede betrekkingen, Aad Correljé, in: Magazine Nationale Veiligheid en Crisisbeheersing, April 2011

Oorzaak en Gevolg olieprijs, Lucia van Geuns, in: Energie+, April 2011

Seasonal Flexibility in the Northwest European Gas Market. An Outlook for 2015 and 2020, CIEP Energy Paper, April 2011

China, Europe and International Security, Bram Buijs, in: EU-China Observer, March 2011

IEF: twenty years of producer - consumer dialogue in a changing world, Bassam Fattouh en Coby van der Linde, IEF, Riyadh, Saudi Arabia, February 2011 (www.iefs.org)

Zigzag-bewegingen rond kernenergie, Jacques de Jong in: Internationale Spectator 65(1), januari 2011



Global estimates pitch unconventional reserves currently at anything up to 920bcm or beyond, five times the size of conventional reserves.

Russian Arctic prospects are the most likely candidates to plug some of the gaps in future, but expect to see OPEC market concentration to become remarkably neat towards 2020. When new reserves come online in technologically challenging environments, this won't be a free lunch from a political risk perspective either. Biofuels will probably continue to see relatively high growth on the back of EU/US subsidies, but this will hardly be sufficient to shift the oil needle to any significant degree. Moreover, sovereign control isn't going to be the exception but a standardised production rule in the upstream world.

GAS GAMES: UNCERTAIN WINNERS

Despite oil's obvious woes, crude is far from passé. If anything it remains the Holy Grail for gas producers, all of whom are desperate to maintain the oil-indexed link for gas supply contracts. The reason is simple enough: oil remains far more expensive than wholesale gas prices traded on European and US markets – at least for now, given the difficult time gas producers have had over the past two years from weak fundamentals and new streams of supply growth. Although markets have lightened of late, the gas world remains in flux with no clear winners (and indeed no clear losers). How gas dynamics play out is therefore open to considerable interpretation and debate. The good news for consumers at least, is that the largest gas producers tend to sit on politically more stable ground than the giants of oil.

The 2008/2009 recession cut global gas demand by around 3% according to the IEA in 2009, with European demand sliding by 7%. Bad stuff, but nothing producers hadn't seen before. But a wealth of new gas oil came on stream at exactly the wrong time for producers – be it pipelines, LNG, or more critically, breakthroughs in 'unconventional' gas production. The likes of Qatar which invested heavily in LNG tanks in the early 2000s had little due that shale gas would be lurking quite so readily around the corner – clearly not, or producers would not have had another 80mtr of LNG ready to roll in 2010.

Global estimates pitch unconventional reserves currently at anything up to 920bcm or beyond, five times the size of conventional reserves. The implications for the gas sector

could thus be genuinely seismic and in the true sense of the word. The US has been the main mover in this regard through its prolific shale gas output and is now the largest gas producer on earth surpassing Russia's 600bcm/y in 2009. In ball-park terms this equates to half of US gas needs, and what's more, this has been done at a highly competitive broken price of \$3-7 per MMBtu. 'unconventional' has thus become distinctly conventional as far as the US is concerned, with the more significant impact being that producers elsewhere have lost what they saw as a 'banker' LNG market. Even if you managed to sell gas in the US right now, you almost certainly wouldn't like the price. Should Europe start to seriously develop its own unconventional supplies in Poland, Romania, Germany, Hungary and Austria over the next decade, it would be fair to say most Atlantic Basin bets are off.

But the impacts have also rebounded in the Pacific Basin. China and India were quick to latch on, playing prospective MENA, Russian, Central Asian and Australian supplies off against each other on volume and price. China has not only been able to draw on cheaper LNG than originally envisaged, it has been the main mover in securing Australian CBM supplies. If we add Turkmenistan and Burma into the Chinese pipeline mix, alongside large amounts of Qatar LNG, Beijing is well situated to leverage its buying position in the longer term. It has also earmarked 30bcm of gas to come from its own unconventional reserves. This clearly wasn't what Russia had in mind; it assumed it would be able to sell expensive Siberian supplies directly into Chinese markets, which in turn would be used as leverage over other Asia-Pacific consumers and more importantly, over its core European demand base.

STRONG HAND OR BUST FLUSH?

Consumers have thus been dealt a strong geopolitical hand from these subterranean shifts. China realises that greater supply to Asian markets is a good thing, and not only to keep producers on their toes by tempering Beijing's 'sleazy' chase for natural resources. Europe can supposedly plump for more gas, less coal and limited renewables to reduce emissions. Things have progressed so far in the US that Congress is starting to entertain the notion of phasing out coal in favour

Columns

The 2011 columns in *Energie Actueel* (previously *Energie Nederland*) are written by: Coby van der Linde, Pieter Boot and Aad Correlje (<http://www.clingendael.nl/ciep/publications/columns/>).

Activities

CIEP organised numerous activities (meetings, training programmes, conferences, etc.) during 2011. A listing is given below and on <http://www.clingendael.nl/ciep/events/2011/>

13 December 2011 – CIEP 10 year anniversary diner

30 November 2011 - Clingendael Energy Conference: "New Energy Technologies: Global Competition, Innovation and China"

17 Nov. 2011 – CIEP 10 year anniversary Conference on NW European markets

25 October 2011 – Christof Ruehl (BP) meets NL energy

8 September 2011 – CIEP Gas Day

7 & 8 July 2011 - Workshop Gas Supply Security Architecture (with FSR, FEEM, WP)

21 June 2011 - BP Statistical Review of World Energy 2011

17 March 2011 - Energy and Finance Seminar: "Energy finance in a new world?"

8 March 2011 - The future of the EU Emission Trading System

18 February 2011 - ExxonMobil Outlook for Energy - A View to 2030

17 February 2011 - Crisis response: communication lessons of the Macondo oil spill

11 January 2011 - Dutch–French Cooperation Council High Level Seminar on Energy Markets & Policy Trends



Linkages will continue to recalibrate global affairs writ large on the simple reasoning that producer supply will inexorably lean towards Asian demand.

large on the simple reasoning that producer supply will inexorably lean towards Asian demand.

If anything, China has cannily used the economic downturn as the perfect storm to make strategic resource investments when few else could. Loans for oil agreements were an easy sell for those deemed to be on the critical list of resource (mis)management. Venezuela was falling over itself to sign a \$20bn credit line in exchange for up to 200,000bbl for Stingoex and CMC. Colombia looks similarly keen to provide an \$8bn transportation outlet to China to help circumvent the Panama Canal for Venezuelan supplies. Russia wasn't much different, sinking a \$25bn oil export-backed loan agreement for Rosneft to supply China with up to 300,000bbl over the next twenty years. China ripped Central Asian supply in the bud, sourcing oil from Kazakhstan and gas from Turkmenistan and indeed, Uzbekistan. Southeast Asian and Australasian supply is increasingly dominated by Chinese demand, alongside a swathe of African states joining the ranks of Chinese natural resource interests. China has galvanized relations with West African producers, most notably Angola, but with Nigeria, Guinea and Ghana firmly on the rise, nurturing developments in Central and East Africa. North Africa is also a going concern.

The list could easily go on. China has actually made over 200 resource investments in over 50 countries. But it's not just in 'frontier' markets where China has been investing. Brazil secured a \$10bn loan to help finance its \$174bn five-year strategic energy plan, quickly followed by investments in Argentina, while Canada has opened up tar sand prospects for overseas investment. This matters economically – 5.7% growth in Latin America, 4.7% in sub-Saharan Africa and 9.3% in East Asia & the Pacific would all be unthinkable without Chinese demand – but it also has a political edge: resource rich states are increasingly empowered to play off competing Western and Eastern commercial interests. This can be seen in Central Asia where Russian, European, US and Asian suitors all want to be sat at the table, in Africa where resource rents inevitably go to the highest, or indeed sometimes most corrupt bidders. In Latin America, there is now an increasingly fine line between those playing the

market and those draining the state, while Russia clearly wants to push its economic and political ends by energy means. It's China that has changed the game, and China that has stolen tentative US and European ground.

This certainly applies to the Middle East where China has made its resource presence firmly felt. Marginal producers are exactly that for China now: marginal. Risk, or rather tolerance of risk, plays a major part when going for juicy finds. Beijing is well aware that some of their more exotic commodity bets might not pay off, but it's no surprise that China has been leading the charge back to Iraq to make sure they can capitalize on new prospects. Baghdad sits on some of the largest reserves in the world, getting your foot in a US opened door is a smart long-term move. Likewise, China has major energy links with Saudi Arabia, Kuwait, UAE, Qatar, Yemen and Oman to ensure that supplies flow eastward. More controversially, Beijing sees Iran as a major supply option. It has twenty five year LNG supply contracts in place with Tehran and has taken a majority stake developing the Yadavaran oil field to ship 300,000bbl to the mainland over the next thirty years. North Pan Gas and North Azadegan are more recent additions to China's Persian collection.

On their own, such deals sound a little dry, but they couldn't have any sharper political resonance if you tried. It's highly unlikely that China will do much heavy lifting on international sanctions against the Iranian nuclear programme unless its most important regional energy supplier, Saudi Arabia, decides to call time on Tehran's nuclear ambitions and put pressure on Beijing to comply accordingly. China knows that the Imbibi it takes from Riyadh will be crucial to meeting long-term demand, and ultimately it's the one relationship it must make work in the Middle East. Arab oil supplies still trump Persian output. The US gets this to some degree, and this explains why the White House has been happy to let China source more and more Saudi (and Iraqi) oil to pressure Tehran. From an energy perspective, this places the Saudi-Iranian power play at the heart of the US-China energy relationship in the Middle East. What's more the Saudis know it – China's presence gives them considerable political leverage over Washington, Beijing and ultimately Tehran.

SECTION TWO PARADOX OF SCARCITY 30

31 EXPLORING THE UNCERTAIN WORLD OF ENERGY: 2000-2020 AGE OF PARADOX

Training

One day CIEP Training:

3 November 2011 - The geopolitics of energy transition

30 May 2011 - Shifting centre of gravity in EU fuel mix politics

13-15 July 2011 – International Energy Politics (For Min. Of Foreign Affairs)

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 (23 and 24 November 2011) and a energy training day for Dutch Secondary School students (YES! studiedag, 23 March 2011)

Meetings

Gas group: monthly meetings

Oil group: quarterly meetings

Fuelmix group: bi-monthly meetings

Contact Group meetings: 24 May, 20 September, 6 December 2011

Advisory Board Meetings: 21 June, 13 December 2011

Boardmeeting Stichting Fonds Instituut: 19 May, 17 November 2011

Lectures, Speeches, Presentations, Media and Webiste

During 2011, CIEP staff members gave numerous lectures, speeches, and presentations or chaired sessions during training courses, conferences and seminars. Also, various interviews for radio, television and newspapers were given by CIEP staff in the course of 2011 .

Website

All CIEP publications were posted on the <http://www.clingendael.nl/ciep/publications> website. Internet is an important communication and information dissemination tool for CIEP. In 2011, the Clingendael site recorded many successful hits and visitors (226.939 hits and 159.182 visitors on the ciep home page; 259.358 hits and 78.533 visitors on ciep publications; 214.066 hits and 77.185 visitors on ciep staff and 6228 hits and 3521 visitors on about ciep). CIEP publications were frequently downloaded (for example: Seasonal flexibility paper: 16.520 hits and 1800 visitors; Gas target model: 10.433 hits and 926 visitors; oil price article van Geuns: 1713 hits and 823 visitors; critical thinking on minerals paper for polinares: 1217 hits and 650 visitors; IEF book: 6625 hits and 649 visitors; columns: 5689 hits and 3491 visitors).



Staff

In 2011, 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)
Matthew Hulbert	senior researcher	(1.0 fte) (since 01.07.2011)
Leonie Meulman	researcher	(1.0 fte)
Jochem Meijknecht	researcher	(1.0 fte)
Bram Buijs	researcher	(1.0 fte) (until 15.12.2011)
Koen Groot	researcher	(1.0 fte)(since 01.12.2011)
Wendy Auf dem Brinke	secretary	(0,7fte)
Marco Blankestijn	fin. administrator	(0.2fte)

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

Jacques de Jong	senior research fellow	(0.4 fte)
Dick de Jong	senior research fellow	(0.2 fte)
Luc Werring	senior research fellow	(project basis)
Christian Cleutinx	senior research fellow	(project basis)
Aad Correljé	associate fellow	(0.2 fte)
Dirk Bensdorp	associate fellow	(project basis)
Pieter Boot	associate fellow	(0.2 fte)
Martien Visser	associate fellow	(project basis)
Jan Hein Jesse	associate fellow	(project basis)

During 2011, the following students were connected for at least part of the year to CIEP staff:

Bas Percival	PhD candidate (EDGaR project)
Stef Hoffer	student intern
Rick Bosman	student intern
Timon Dubbeling	student intern

Other functions held by CIEP director:

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 N.V.
	Member of the international advisory board of KAPSARC (King Abdullah Petroleum Study and Research Center) Saudi Arabia
	Member council of Rotterdam Climate Initiative (RCI)

Board of the Foundation Stichting Fonds Instituut Clingendael in 2011

Drs. G.H.B. Verberg, chairman
Drs. H.D.A. Haks RA, treasurer
Mr. W.O. Russell, member
Ir. R. Willems, member
Mw. Mr. I. L. Van Veldhuizen, member
Mw. drs A. Moons, member



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 other 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 transit.

