enova

Annual Report 2011

The driving force for future energy solutions

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PART 1

Enova now and onwards

Utilisation of district heating – Gran, Oppland County
Photo: Ivan Brodey

Key figures

1.35
TWh energy result

In 2011, we supported projects with a total energy result of 1.35 TWh through the Energy Fund, equally distributed between energy efficiency and renewable heating.

Did you know that... this is equal to the electricity production from two Alta power plants!

140
inquiries per day

Ask Enova, our nationwide information and advice helpline, received more than 50,000 inquiries during the year.

Did you know that... 45,000 of these were inquiries from private households!

4,000
projects in the portfolio

More than 4,000 projects have been supported by Enova since 2002.

Did you know that... in addition, more than 18,000 private households have received subsidies for acquiring energy-efficient heating solutions and undertaking energy efficiency measures!

3.0
TWh new renewable power

Enova has supported 3 TWh of new power production from renewable energy sources.

Did you know that... this is enough electricity to charge an electric car to drive Norway lengthways from Lindesnes to Nordkapp and back 400,000 times!

45
billion NOK

Our projects have triggered about NOK 45 billion in other capital invested in the market for environmentally friendly energy solutions in Norway.

Did you know that... this was triggered by NOK 9 billion in support from Enova!

9
million tonnes CO_2

The projects Enova has supported will contribute to an annual reduction of nine million tonnes of CO_2 emissions.

Did you know that... this is equal to about 15 per cent of Norway's total annual domestic greenhouse gas emissions!

23
projects every day

Funds were allocated for more than 23 projects every day on average in 2011.

Did you know that... more than 600 supported project applications came from professional market players in 2011 and about 8,000 came from households!

250
participants

In 2011, 250 builders and project planners participated in start-up courses in planning passive houses.

Did you know that... since its inception in 2010, nearly 1,200 participants have taken this course!

7.3
TWh renewable heating

Enova has supported 7.3 TWh of heating and fuel production based on renewable energy sources.

Did you know that.... this is equal to the heating demand for 30 per cent of Norway's households!

6.3
TWh energy saved

Through support from Enova, 6.3 TWh of energy is saved annually through projects that utilise energy more efficiently.

Did you know that... for Norway's five million citizens, this is equal to 1,300 kWh of energy saved annually per person!

16.6
TWh energy result

With resources from the Energy Fund, Enova has – in cooperation with the market – triggered annual energy results equalling a total of 16.6 TWh during the period 2001 – 2011.

Did you know that... this is equal to the energy use of 1/3 of Norway's households!

4.4
TWh energy result

Through other assignments, Enova has also triggered 4.4 TWh in annual energy results during the period 2001-2011.

Did you know that... this is equal to the energy use of all the households in Oslo!

The green gold

The development of prosperity in Norway over the last 100 years has primarily been driven by the utilisation of major energy resources: First hydropower – then the oil and gas resources. From the beginning of the 1950s and up to today, power production has increased nearly tenfold. From the beginning of the 1970s and up to the 1990s the gross national product (GNP) for mainland Norway increased in line with the growth in power production.

From the mid-1990s and forward, the growth in the gross national product has increased more than power production and end-use. We have been able to continue our economic growth without increasing use of power at the same pace. We are able to produce more without using more energy.

There are several reasons why our economy has become less energy-intensive. One factor is that the industry structure has changed. The strongest economic growth has taken place in sectors that are not very energy-intensive. Technological development is another factor. We are able to produce the same products and services using less energy than before (cf. Figure 1.1). The disconnect between growth (GNP) and energy end-use from 2000 until 2009 equals nearly 30 TWh.

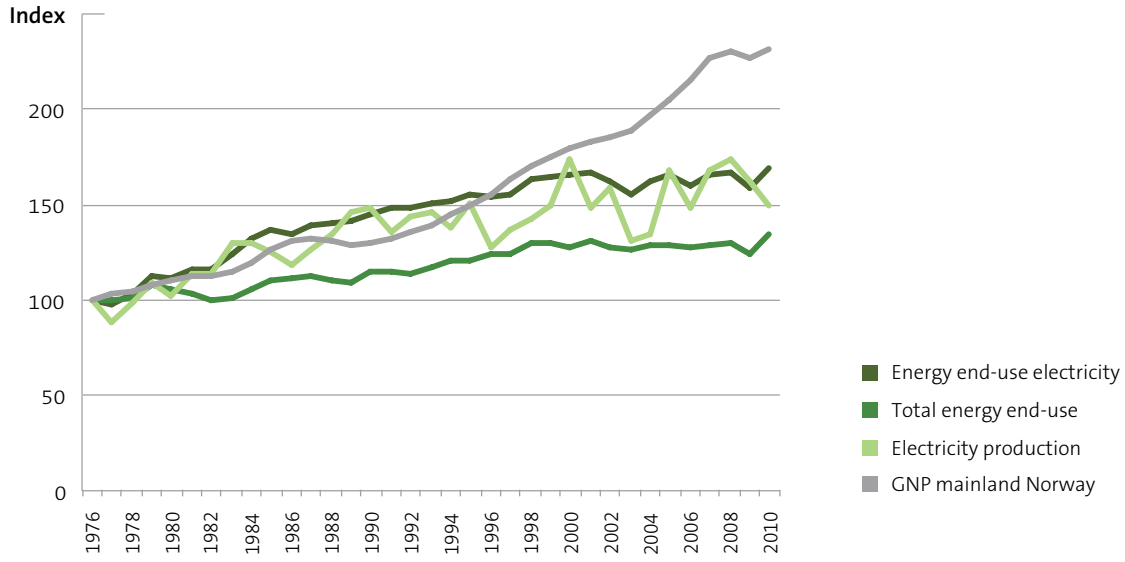
An important driver for this development is naturally the increase in energy prices. While the general price of goods and services increased by 19 per cent from 2000 to 2009, energy prices (electricity) nearly doubled.

Another important driver for curbing the growth in energy end-use is policy instruments.

Since 2000, several measures have been implemented to help reduce energy end-use. For instance, several amendments have been made to the Building Regulations which result in new buildings having considerably lower energy demand than before. Extensive energy labelling has also been carried out on equipment and buildings.

Enova has also proven to be an important tool. During the period from 2001, when we were established, through 2011,

FIGURE 1.1 DEVELOPMENT IN ENERGY END-USE, POWER PRODUCTION AND GNP IN NORWAY, INDEX 1976=100



Source: Statistics Norway (edited by Enova)

Enova has – in cooperation with the market – triggered measures to increase access to renewable energy and promote efficient energy use equal to 17.9 TWh, of which 16.6 TWh were triggered through the Energy Fund. In addition, Enova has triggered 3.1 TWh in new infrastructure for use of natural gas. We are proud of these results.

The demand for energy is increasing

Enova and other market players have achieved a lot in the last ten years, but that is no reason to take a breather – much remains undone.

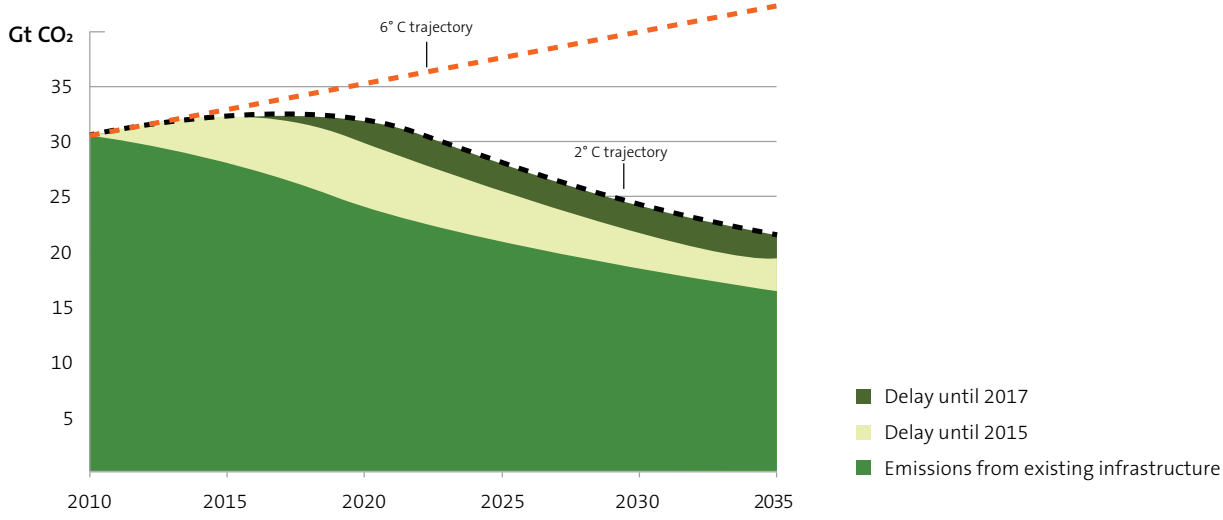
Even though the overall energy end-use has been relatively stable for the last 10 to 20 years, the trend for the underlying drivers regarding energy use in the long term will result in an increased demand for energy. An important driver is population development. There are currently about five million citizens in Norway. According to Statistics Norway, population is expected to increase to about 6.5 million by 2050, an increase of 30 per cent.

The need for energy and energy services:

Energy services are all services/functions that require energy, which means that we demand the services heating, lighting, hot water, etc. How much energy is required to deliver the service (delivered energy) depends on how much energy is theoretically needed to deliver the service (energy demand), and how efficiently we can deliver it (efficiency).

Another trend is that the average size of households continues to decline, which is a result of people waiting longer to establish families, and living longer. Small households use more energy per person than large households. Even though centralisation – moving to the cities and into smaller residences – to a certain degree contributes to reduce energy use, the households' overall demand for energy will still increase.

FIGURE 1.2 IEA'S PROJECTION OF CONSEQUENCES IF ACTION TO INTENSIFY MEASURES IS DELAYED, ACCORDING TO THE 450 PPM SCENARIO IN WORLD ENERGY OUTLOOK 2011



Source: IEA World Energy Outlook 2011 (edited by Enova)

A new growth in the power-intensive industry, along with potential establishment of new businesses with major energy use (such as cloud computing/server farms) can contribute to an amplified growth in energy demand, and in turn contribute to increasing the energy intensity.

Increased energy demand results in climate challenges
While the energy demand in Norway will increase relatively moderately in the years to come, the global energy demand will increase significantly, primarily as a consequence of a completely necessary elevation of the living standard for large parts of the world's population. The challenge is how to combine this with the UN's climate goals.

In order to achieve the UN's climate goals, the concentrations of greenhouse gases in the atmosphere must be stabilised at 450 ppm. If the emissions increase in line with the growth in energy demand, the climate consequences will be dramatic.

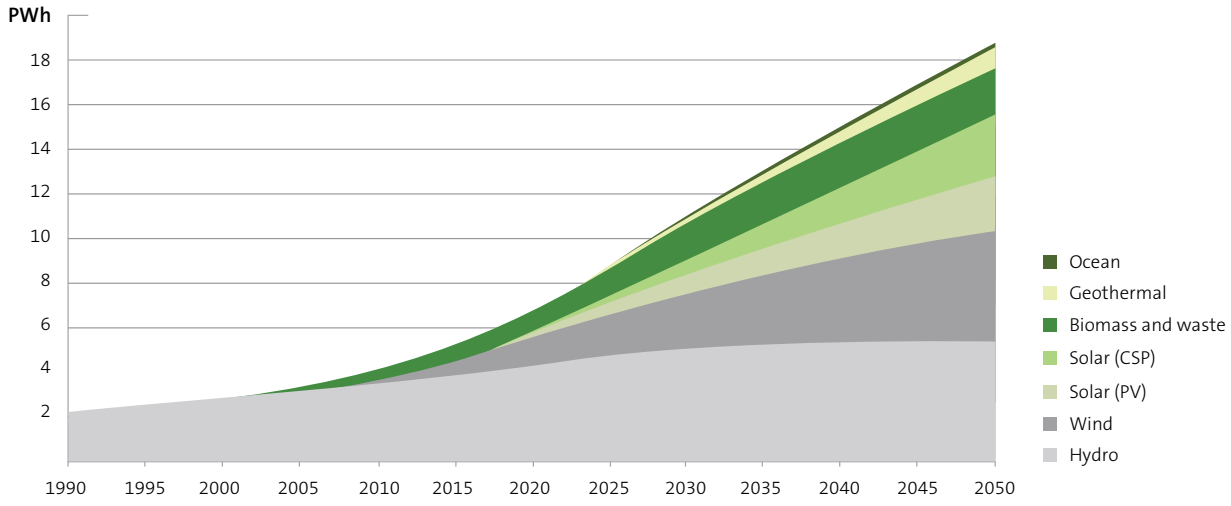
Fortunately, the UN's climate goals can be reached even with a growth in the global energy demand. This will require us to utilise the possibilities for energy efficiency, increased use of renewable energy and cleaning greenhouse gas emissions – and we must act fast.

The window for achieving the ambition in the UN's two-degree goal is about to close. If the growth in greenhouse gas emissions continues at today's rate, we will, according to the International Energy Agency (IEA), have lost the opportunity to achieve the UN's climate goals in 2017 (cf. Figure 1.2).

This means that the pressure to utilise the opportunities for increased production of renewable energy, energy efficiency, and the demand for technology that can deliver this will increase – dramatically (cf. Figure 1.3).

Climate challenges yield climate opportunities
Norway holds a very favourable position: We have a high percentage of renewables. We have major unused potential for increased renewable energy production. In addition, we

FIGURE 1.3 GROWTH IN RENEWABLE POWER PRODUCTION IN IEA ETP's "BLUE MAP SCENARIO" FOR ACHIEVING THE UN'S TWO-DEGREE GOAL



Source: IEA Energy Technology Perspectives 2010 (edited by Enova)

have great possibilities for releasing energy through even more efficient use of energy. And we have the technology and expertise to make this happen.

This is the green gold!

The green gold enables us to not just cover a future growth in energy demand, but also form the foundation for economic growth.

The total potential for more efficient energy use, increased use of renewable heating and the ambitions for increased power production can significantly improve the power balance.

This results in major opportunities to offer the European market sorely needed balancing power, and of equal importance – it gives room for, among other things, putting proactive efforts into power-intensive industry that is supplied with renewable energy.

TECHNICAL, FINANCIAL AND REALISTIC POTENTIAL

Technical potential:
The calculated reduction in energy end-use if all technical possibilities are implemented.

Financial potential:
Takes a basis in what is technically feasible and assesses whether, given assumptions for costs, savings and potential required rates of return, it is commercially viable to implement.

Realistic potential:
Takes consideration of absolute constraints in the market that restrict the financial potential. This could be access to inputs such as materials, personnel or capital. These types of constraints are more relevant.

A good industry can become better
In Norway, industry is responsible for a significant share of stationary energy end-use. And even though the Norwegian power-intensive industry is world-leading within energy-efficiency, there is always room for improvement.

Enova has previously looked at the possibility for making energy available, particularly electricity, through more efficient energy use in industry. In total, the technical potential equalled 27 TWh, but much of this assumes that infrastructure for handling waste heat is available. With a perspective towards 2020, it is unlikely this infrastructure will be in place.

The remaining potential of 15 TWh is closer to realisation, but there are considerable barriers here as well. The most important are the lack of focus or energy management, lack of capacity and inadequate profitability.
Technical, financial and realistic potential

Significant potential in buildings
Recently, Enova looked at the possibility of reducing the energy demand for heating purposes in existing buildings. If existing buildings were upgraded to the current regulatory standard and all new construction up to 2020 is also carried out at a low energy level, the overall technical potential for a reduced demand for energy in buildings will be 13 TWh. The corresponding potential in commercial buildings constitutes 20 TWh.

Owning a building with high energy performance must result in added value in the market over time. Through higher rent, better sales price, higher degree of renting and the reduced energy costs, the best energy and environmental buildings will also become the most profitable buildings.

Currently, the profitability of carrying out significant upgrades of the energy performance in buildings is largely dependent on accompanying necessary deep renovation. Hence the renovation pace will control the percentage of buildings that will each year realistically carry out the upgrade.

Taking these types of considerations into account, we are left with a realistic potential for the period leading up towards 2020 for upgrading existing buildings totalling about 7.5 TWh for residences and non-residential buildings.

Still a potential for increased use of renewable heating
The development of district heating has been considerable in the last ten years, and a significant part of this development has been supported by Enova. But continuing to increase use of renewable heating still makes sense.

Through increased use of district heating and not least small heating plants, the percentage of the population using central heating systems based on renewable energy can increase.

Enova works with the market
Even though the realistic potentials are considerable and the profitability can be good in many of the measures, experience shows that a significant part of the potential will remain unused.

A reason for this could be that energy is often low on the priority list. Energy constitutes such a small percentage of the total costs for most companies and households that it just is not an important focus area.

It is difficult to change the priorities for each household or company. In the best case scenario, it is a demanding challenge that can be solved with long-term work. In the worst case scenario, it is impossible or unreasonable to affect behaviour and priorities to a sufficient degree. In order to change behaviour and priorities, the climate challenges perhaps yield a stronger incentive to change than energy and security of supply.

It is natural for companies to primarily prioritise measures based on profitability in a competitive market. Private households make their energy choices based on their heating, lighting, user-friendliness and comfort needs, and aesthetics are also important for many homeowners.

Instead of trying to make everyone passionate about energy, it is more realistic and effective to focus on giving the market what it wants – but in a more energy-efficient and climate-friendly manner.

The right medicine – correct dosage
In order to trigger the desired potential, it is important for Enova's instruments to break down the barriers blocking energy efficiency and increased use of renewable energy.

This is the only way to create lasting change in the market.

In most areas there are several reasons why the potential for energy efficiency and increased use/production of renewable energy remains unused. Perceived unprofitability is the barrier noted most often. There may be many underlying causes: technology is too expensive in relation to the reward, inadequate competition from the suppliers, and the suppliers lack experience with the solution and add high risk mark-ups.

Another important barrier could be that the end user lacks information on the available alternatives. There are usually multiple causes that jointly constitute the barrier for implementing energy efficiency measures. Addressing merely one of these barriers will not trigger the potential by itself.

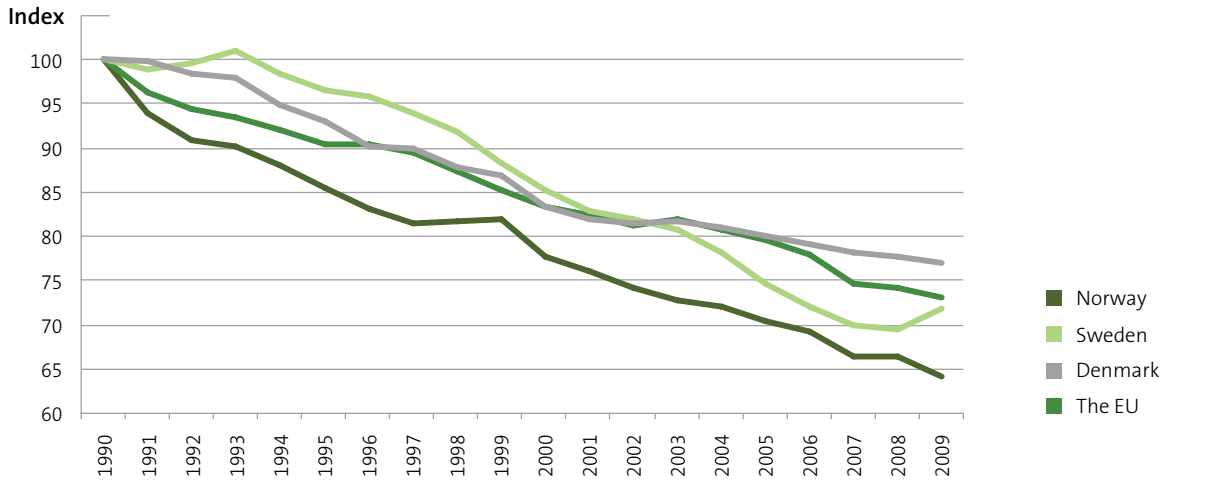
In the worst case, little is achieved at a high cost without the correct timing and dimensioning of the instruments. For instance, intensive efforts to achieve an increase in the renovation pace for residences could in the worst case scenario only end up contributing to a significant growth in costs, unless work is also carried out to increase the capacity needed to do the job.

It is also important to achieve a sensible interaction between different instruments, where some instruments focus on bringing new solutions to the market, while others increase the general level by removing the worst solutions from the market. This enables the instruments to strengthen each other and yield greater changes.

Resources are found, potential is created
With new solutions come new possibilities. This might be illustrated most clearly within the oil and gas industry, where new technology increasingly makes new fields commercially viable. Creating such a dynamic has been and will continue to be crucial for Enova as regards solutions and technology related to renewable energy and energy efficiency.

Even now there is considerable technology development and innovation within renewable energy and energy efficiency. For instance, the companies REC and NorSun have developed world-class solar cell-related technology with a basis in the Norwegian smelting plant industry. Finnfjord (in Troms County) – one of Europe's leading manufacturers of ferrosilicon – has now started building a waste heat recovery plant. This plant is the first of its kind both as regards size and efficiency.

FIGURE 1.4 DEVELOPMENT IN ENERGY INTENSITY, END-USE OF ENERGY PER GNP, INDEX 1990=100



Source: ODYSSEE-Indicators

These are examples of major advances and new solutions, but continuous improvement is also taking place (cf. Figure 1.4).

We need the innovators

In the last 20 years we have produced increasingly more with the energy we have available. In other words, we have become increasingly energy-efficient. Did this happen by itself or is it the result of targeted efforts? Enova believes this positive development is an interaction between policy instruments for energy efficiency along with conscious efforts in research and development, and development of the market.

In order for the positive development to continue, we must direct our efforts at those who are willing to bring the market forward – the innovators. Someone needs to lead the way in order for others to follow.

Enova wants to achieve this through supporting and creating positive attention surrounding those who choose to take it a step further, for instance by renovating to a significantly improved energy label. We believe that energy labelling of buildings can have a considerable effect if there is a real competitive factor between good and bad buildings. If no buildings have a "Green A", having a "Red F" is not so bad.

When attempting to change large markets, such as the building market, one innovative market player is not enough – we need many, and we must ensure the rest of the market follows.

Our vision

An energy-efficient and renewable Norway

Our objective

Enova's main objective is to promote an environmentally friendly restructuring of energy end-use and energy production. The energy restructuring is a long-term commitment to develop the market for efficient and environmentally friendly energy solutions that contribute to strengthen the security of supply for energy and reduce greenhouse gas emissions.

Our strategy

Through the management of our assignment we will contribute to:

- **Technology development and innovation**
- **Market change**
- **Behaviour change**

Our values

Clear
Responsible
Inspiring
Market oriented

Technology development and innovation

- Introduction and development of new technologies and solutions in the energy market
- Create possibilities for increased production of renewable energy and more efficient energy end-use through stimulating the market players that are willing to commit to new solutions
- Targeted qualification of new technologies to ensure the users' most important function requirements, and sharing knowledge about the outcome

Market change

- Well-functioning markets for efficient and environmentally friendly energy solutions
- Increase demand for future-oriented energy solutions by creating confidence in these solutions among end-users
- Reduce production and process costs through increasing volume and gaining experience
  Increase expertise on the supply side to ensure good quality and effective competition
- Lift new future-oriented energy solutions in to the market and improve the availability of the good solutions

Behaviour change

- Increased general knowledge in society regarding the possibility of utilising efficient and environmentally friendly energy solutions
- Motivate correct behaviour; increase end-users' insight into and attitude regarding their own energy use and future-oriented energy solutions through making updated and correct information available, and highlighting and communicating good examples and experiences

Enova stirs up change in the energy markets

NILS KRISTIAN NAKSTAD
Chief Executive Officer (CEO)

Through its first ten years, Enova has made a significant contribution to lasting change in the availability and demand for efficient and renewable energy solutions in Norway.

After more than 4,000 projects in cooperation with the market, we receive a constant supply of new good stories that illustrate that we are succeeding in relation to our mission for society – an environmentally friendly restructuring of energy end-use and energy production. Enova changes markets. Through financing and advising, we stimulate development of new and future-oriented energy solutions. With Enova's help, projects become profitable and more people have the opportunity to lead the way in the development. Demand is increasing for new, environmentallyW friendly energy solutions. Increased demand is the key to making such solutions competitive, enabling them to stand alone, and thus achieving lasting change in the market.

An efficient heating market
The heating industry has, with support from Enova, developed a district heating market in Norway. District heating has been established or is being developed in 58 out of 100 Norwegian towns. They are steadily being further developed, and new urban areas are jumping on the wagon. District heating enables us to utilise waste, bioenergy and other environmentally friendly energy sources on a large scope, with flexible infrastructure which opens for efficient utilisation of the renewable resources. Enova's support of renewable heating allows more and more people to gain access to environmentally friendly heating, and, in cooperation with the industry, we have created a lasting alternative to electricity and oil for heating.

An ambitious construction industry
In 2011, we witnessed major players in the construction industry making an effort to develop the market for low energy houses and passive houses. The players in the construction market can see that the efforts are making the solutions competitive and profitable. We saw a considerable growth in the number of applications in this area in 2011 and would like to commend serious market players that lead by example. This is a development that we are pleased about. We carried out an extensive study in 2011 to further increase knowledge regarding barriers and potentials in this market. Through this work, we have gained a new recognition of the possibilities for more efficient energy use in buildings. The possibilities are great, and we believe our instruments are also well-suited to address future challenges.

Good overall effect of Enova's work
2011 was another demanding year for Norwegian industry and businesses. Tough economic times influenced the willingness and ability to implement proactive actions and investments in parts of the market. This particularly becomes visible in the industry sector where there have been multiple projects ready to start, but which were delayed. Our result connected to the disposition of the resources in the Energy Fund was therefore lower than expected in 2011. However, the result of the total activity through our first ten years is still something to be proud of. With resources from the Energy Fund, Enova has – in cooperation with the market – triggered annual energy results totalling 16.6 TWh during the period from 2001 through 2011. The goal for this period was 18 TWh. Through other assignments we have also triggered 4.4 TWh in annual energy results.

New four-year agreement
In 2011, negotiations started with the Ministry of Petroleum and Energy on a new four-year agreement for Enova. The different markets are assessed thoroughly, and possibilities for further environmentally friendly conversion to renewable energy sources are mapped. There are many exciting opportunities both within energy efficiency in buildings and industry, renewable heating and introduction of new technology. We appreciate the enthusiasm we have experienced both from the market and other interested parties in relation to our future development. This enables us to have an even clearer position, which enhances the possibilities for achieving lasting changes in the market.

The green gold
The development of environmentally friendly energy technology is growing rapidly in the global market. According to the Bloomberg financial analyst firm, investments in environmentally friendly power production have increased from USD 53.6 billion in 2004 to USD 260 billion in 2011, despite financial crises and a general downturn in financial investments. According to the same firm, the investments in renewable power production are now greater than the investments in coal and gas power. This represents a considerable opportunity for Norway, which has great unexploited renewable energy resources, recognised power-intensive industry and expertise within innovation and technology development. A lot of important changes will take place in the climate and energy area in the time to come. In close interaction with the market, we look forward to being a driving force for realising these exciting opportunities.

Governance

Corporate social responsibility

Enova's vision is an energy-efficient and renewable Norway. Our most important contribution to society is to contribute to lasting changes in the availability of and demand for efficient and renewable energy solutions. Enova will be the driving force for future-oriented energy solutions and we are very mindful of how we safeguard this mission.

Enova sets strict requirements for itself:
It is important for us that:

- We have goals, values and ethical guidelines that describe the fundamental attitudes and the philosophy that characterise our organisation.
- We exercise *corporate governance* where we emphasise openness, transparency, responsibility, equality and long-term perspectives.
- We set high integrity requirements, which e.g. entail that we do not tolerate any form of corruption and we promote a free market.
- We are open, honest and sensitive in our communication and contact with the outside world.
- We will not discriminate based on gender, religion, nationality or ethnicity, social groups or political viewpoints.
- We are attentive to changes in what society in general considers good business practices and evaluate and change our own practices when necessary.

Enova manages the resources from the Energy Fund. The terms for the management are stipulated in a four-year agreement between the Ministry of Petroleum and Energy (MPE) and Enova. The agreement ensures the resources are managed pursuant to the goals and assumptions used as a basis for use of the Fund's resources. The annual support letter clarifies and supplements the stipulated terms.

The allocation of support must take place in accordance with *objective* and *transparent* criteria. Management and internal control must take place in accordance with the rules that apply to financial management in the Government. We must have appropriate *control over the processing of applications and allocation of support*, and ensure the support recipient *fulfils contractual terms and result targets*.

Enova provides State support for projects. The support must be within the framework of the EEA State aid rules.

All programmes and projects must be approved in advance by the ESA (EFTA Surveillance Authority). In cooperation with the MPE and ESA, we have devoted considerable work to approving Enova's programmes and projects for a new period. In a decision dated 18 July 2011, the ESA approved Enova's support schemes under the Energy Fund up to and including 31 December 2016.

Organisation

Values and ethical guidelines
Enova relies on trust and credibility to carry out its tasks. Our daily activities must be run in a manner characterised by quality in all stages. Our ethical guidelines build upon the "Ethical guidelines for government service" and direct how we in Enova should conduct ourselves in our dealings with each other and the outside world. Along with our values – *Clear, Responsible, Inspiring and Market oriented* – these guidelines will contribute to Enova's emergence as a pioneering company in ethical behaviour.

Enova's value foundation has great significance and the values are solidly anchored in Enova's organisation. We work actively to achieve an organisation characterised by equality, diversity and respect. We stimulate free discussions on demanding issues, where tolerance for others' attitudes and opinions is shown. We believe we are very well on the way as regards being Responsible and Market oriented. In the future, the focus will be directed at assigning even greater weight and significance to the values Inspiring and Clear.

Working environment
A good working environment is a success criterion for us. Our vision and our values are used as a basis for the other elements in our overall HR work. Good results in our annual employee survey show that we continue to develop our working environment further. We focus on this and have been proactive as regards further developing the culture and environment. We are continuously developing to become a modern, inclusive and solid workplace.

In 2011, Enova started systematic branding work at an overall company level where working with the Enova brand has been key throughout the year. Increased focus on brand development and thus culture development, is a step in making Enova more clear and significant. The objective is to build the company's reputation.

Management and control

Goal management model
Safe and precise navigation requires good management tools. We use a goal management model with goals and key figures that include both results and processes in all stages of the activity and within four perspectives:

1. Results/finances
2. Customer/market
3. Internal processes/case processing
4. Organisation/working environment

Each organisation unit has its own scorecard, as well as reporting and follow-up of the three to five most important activities within the unit.

Targeted risk management and good internal control are important in order to achieve goals. Enova has utilised a simple reporting model to help in the work on identifying, measuring and following up risk. Risk reporting is included as part of the goal management model. In our continuous work to develop this we placed particular emphasis on risk assessment in relation to achieving the goals stipulated for the activity in 2011.

Responsible administrator
Significant emphasis has been placed on a cost-efficient administration of the Energy Fund. Case processing, advising and analysis are important parts of our activity.

The trust in Enova as a skilled administrator has been steadily increasing. At the same time, both the financial framework and our tasks have expanded. The project portfolio is dynamic and growing, and we have a considerable number of active projects that are being implemented. As a result of this, reporting and accounting of results has increased in scope and complexity for each year. Sufficient management information and a prudent decision basis are preconditions for management and internal control.

In 2011, Enova took ownership of the financial management system we use to follow up the administrative tasks. At the same time, the accounting of the management assignments has been "insourced" and is handled entirely with our own resources. This facilitates increased efficiency, follow-up and control in line with the framework and strategic platform.

Support system and tools
Our support systems and tools support efficient management and administration. We systematically follow-up all projects and activities that are financed through the Energy Fund. This provides us with reliable, accurate and relevant data to use for daily management and reporting, and as a basis in evaluations and development of new policy instruments.

In 2011, we further developed the following support systems and tools:

Reporting tool for measurement and verification of energy results
Verification of energy results must be based on a review/audit of what energy results the projects have actually achieved. In 2011, we implemented a newly developed reporting tool for measurement and verification of energy results from projects for which a final report has been submitted. The tool is an integrated part of our search portal and case processing system that is available to the support recipients through Enova's website. The reporting must take place retroactively for three years from the time of final reporting.

Electronic invoice procedure system
Enova must have an efficient and robust administration. We have benefited considerably from improving the system support related to invoice procedures and we facilitated an electronic invoice procedure system in 2011. This is integrated with other tools such as the case processing system and hourly and travel expense system. The improved structure and quality-assured processes facilitate increased efficiency, follow-up and control, and will be implemented in 2012.

Case processing system and filing system
Enova works continuously and systematically on further developing and improving our case processing and support systems.

Organisation

Management

Nils Kristian Nakstad
Chief Executive Officer

Nakstad has been Enova's CEO since May 2008. He is a chartered engineer with a degree from the Norwegian Institute of Technology. Nakstad has worked as a researcher and research manager in SINTEF and Project manager in Hydro, and has headed enterprises such as Trondhjem Preserving AS and ReVolt Technology AS. He also holds several board positions in the business world.

Bård Bjerkaker
Chief Communications Officer

Bjerkaker has been responsible for communications in Enova since 2005, and has been the Chief Communications Officer since 2009. His background includes being the head of information in Telenor, head of information/editor in the Norwegian Cooperative Centre in Central Norway, and advisor in the PR firm Lynx Communications. Bjerkaker has a bachelor's degree in language and social sciences from the Norwegian University of Science and Technology with special focus on management. He is a member of the control committee and the board of directors in Melhusbanken and has been a board member in Norsk Kommunikasjonsforening (the Norwegian Communications Association).

Audhild Kvam
Director of the Energy Efficiency Department

Kvam was hired as the Director of the Energy Efficiency Department in Enova in August 2010. She has a Master of Science in Business and Economics from the Pacific Lutheran University in the US, and until recently, worked as the VP Strategy and Marketing in Powel ASA. Previously, she has e.g. worked at the Trondheim Energiverk as an information consultant, head of information and CEO, respectively in Trondheim Energiverk Kraftsalg AS. She has held several board positions and is currently a board member in Energi 21.

Øyvind Leistad
Director of the Energy Production Department

Leistad has been a Senior Advisor in Enova since 2005, and the director of the Energy Production Department since 2007. He has an education in resource economy, financing and investment from the Agricultural University of Norway, and has previously been employed as a senior executive officer/adviser in the Ministry of Petroleum and Energy where he worked with administration of various policy instruments related to stationary energy supply and renewable energy and energy efficiency in particular.

Geir Nysetvold
Chief Financial Officer

Nysetvold has been Enova's Chief Financial Officer since 2007, and has also headed the department for strategy and analysis since 2009. He is a chartered engineer with a degree from the Norwegian Institute of Technology (NTH) and also has several courses in technology, management and finance from NTH and the Norwegian School of Economics (NHH). Nysetvold has previously held several top positions, primarily within insurance, and as a division director and head of the corporate market area in Vital Forsikring. Nysetvold has held several board positions and is a member of the control committee in Nordea Liv Norge AS.

From left:
Bård Bjerkaker
Geir Nysetvold
Nils Kristian Nakstad
Audhild Kvam
Øyvind Leistad

A small and flexible organisation

Enova is a small, flexible organisation, and well-equipped to adapt to new tasks. When a need for special expertise and capacity arises, we solve this through cooperation with other expert environments. Extensive delegation of responsibility and authority in the organisation stimulates our employees to use their experience, their judgement and their expertise in activities which yield results.

Enova manages significant resources on behalf of the society. Our success depends on trust and credibility. As a knowledge organisation, each of our employees plays an important part. If we are to succeed with our mission, we must be able to realise our employees' knowledge and expertise in desired actions – actions that contribute towards Enova reaching its goals. Since Enova was established in 2001, the organisation has steadily grown and currently comprises 59 employees. The distribution between women and men has been stable and even. We use the strength inherent in being a small and flexible organisation to develop an open, dynamic and future-oriented knowledge organisation. The main group of current employees is in the age group 41 – 50. At the same time, it is important for us to maintain a broad age composition in order to utilise the knowledge and experience represented by both younger and older employees.

A distinct framework, clear distribution of roles and responsibilities, and delegated responsibility and authority form the foundation of our organisation. Success requires a focus on the culture we want to have, our mind-set and the way we work. Enova will be an organisation that inspires each person to do their very best. The most recent employee survey shows that our development is positive and the focus on culture and working environment is paying off.

FIGURE 1.5

NUMBER OF EMPLOYEES 2001 – 2011

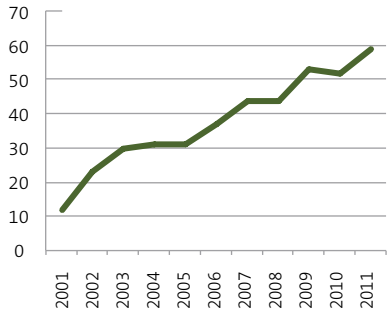


FIGURE 1.6

GENDER DISTRIBUTION AMONG EMPLOYEES

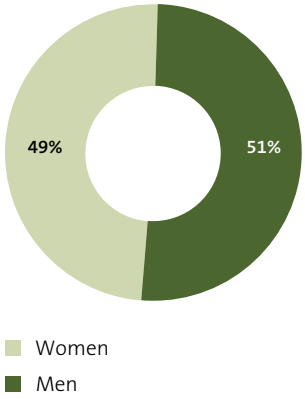
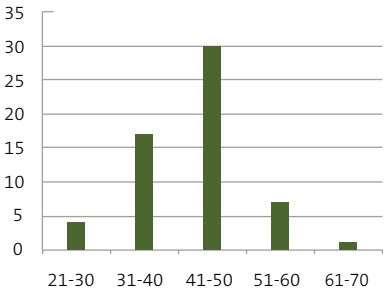


FIGURE 1.7

AGE DISTRIBUTION AMONG EMPLOYEES



PART 2

Good stories

Høg-Jæren Energy Farm – Hå, Rogaland County
Photo: Ivan Brodey

The impact of Enova's projects is yielding clear results

These are examples of the many good stories where Enova has contributed to long-term and lasting market change through good projects both in the private market and industry and business market.

The world's most energy-efficient aluminium industry
Through a unique cooperation with Hydro, Enova has contributed to the Norwegian aluminium industry developing into the world's most energy-efficient and climate friendly. For Hydro, simple math tells them that this is worthwhile: In time, the measures will save millions and give the company a stronger position in the market.

District heating and security of supply
Conversion to renewable heating is one of the most important measures for increased security of supply and more climate-friendly use of energy in Norway. The large cities are already well underway in establishing district heating and the potential in the smaller communities is also substantial. Technical interest, initiative and a sincere passion made entrepreneur Jan Helge Ekeren and his associates a driving force in realising a district heating plant in Gran Municipality in Oppland County. The plant had its first full year of operation in 2011, and is already a commercial and technical success. Enova's support was key to this success.

A robust Norwegian wind power market
Enova's long-term work to establish a robust Norwegian wind power market has contributed to mature and develop the Norwegian wind power market. Enova has helped the market take the step from innovators to large-scale competitive enterprises.
The road has been long, difficult and demanding for the Høg-Jæren Energy Farm in Rogaland County, but perseverance is paying off: The wind farm is now among Europe's most productive.

Heat pumps and the effect of Enova
Enova's targeted measures have made a strong contribution to the significant increase in the number of energy-saving heat pumps that have been installed in Norwegian homes. In 2010, the number of heat pumps sold in Norway had reached a total of 85,000 per year. Calculations show that had Enova not worked on this over time, the number of sold units in 2010 would only have been about 37,000 units.

Taking control of energy use in the Norwegian Armed Forces
By taking control over the energy use in the Norwegian Armed Forces' more than 11,000 buildings spread across Norway – and converting to renewable energy sources for heating – an energy result totalling 240 GWh can be achieved by the end of 2016. Now we can see that long-term efforts in changed energy behaviour will result in lasting change in the organisation. And the project will contribute to raising the ambition level of public building owners outside the Norwegian Armed Forces' own ranks.

Energy-efficient commercial buildings yield competitive advantages in the market
Enova's work to achieve a passive house standard for commercial buildings in 2020 has contributed to a market change that appears to be happening quicker than expected. Now, commercial players in the real estate market are leading the work on improving energy efficiency – and the reason is simple: Energy-efficient buildings are expected to have a higher market value.

Enova's **Good Stories** are presented as brief summaries in this section.
You can read more about Enova's **Good Stories** on **www.enova.no.**

PART 3

Enova's market areas

Hydro Aluminium - Årdal Plant, Årdal in Sogn og Fjordane County
Photo: Scanpix

Renewable Heating:

Real market change through projects in the renewable heating sector

Enova aims to make renewable heating from sources such as bioenergy, solar and geothermal the preferred heating solution.

Support to district heating has led to an energy result of around 5 TWh – making way for real market change in cities and major communities in Norway. In the future, an increasing number of people will gain access to flexible and renewable heating through district heating development. Developing a sustainable market for small heating plants opens up possibilities for providing renewable heating also in areas where there is not a basis for the establishment of a district heating system. There is significant unrealised potential in this area.

Barriers and possibilities

The possibilities for increasing utilisation of renewable heating depend first and foremost in establishing a physical market through building infrastructure.

This applies both to heating pipes between buildings and installation of central heating in the actual building. When the hydronic system is in place, you have a good foundation for flexibility in the choice of which energy sources to use. Enova will contribute to establishing this infrastructure and for the heating to be based on renewable sources over time. The costs of installing hydronic systems must be reduced to ensure that environmentally friendly heating solutions are installed in buildings in the future.

Result in 2011

In 2011, Enova contracted an energy result from renewable heating totalling 761 GWh with its partners in the market (when heating plants installed in buildings and industry are included). The heating programmes administered under the Renewable Heating unit gave a total result of 595 GWh. This is lower than in the two previous years, when the energy results were record-high.

While the number and size of projects within new establishments of district heating has declined in 2011, we experienced a good increase in expansions of existing district heating systems. Biogas production has also provided a considerable contribution to this year's energy result with 153 GWh.

Within the Renewable Heating unit, Enova experienced an increase in the number of applications in 2011, but the size of the projects is generally smaller than before.

Interest and activity level

As a result of recent years efforts, the majority of the most populous urban areas in Norway have already either established, or are in the process of establishing district heating. Further growth is expected in smaller communities and as expansions of existing plants. However, in 2011, support was granted to the establishment of a district heating grid at Jessheim in Akershus County, and for the establishment of large-scale supply of district heating in Bodø in Nordland County. This shows that some major district heating projects still remain.

In 2011, Enova launched a targeted support programme for heating plants of small and medium scale. The Heating Plants Programme replaced the Small Heating Plants Programme. The new programme consists of four sub-programmes with tailored solutions for different applicant groups. In particular, the sub-programmes *Heating Plants - Simplified* and *Heating Plants - Industry* have been well-received in the market, with 99 and 23 applications in 2011, respectively.

Through a tender competition among construction clients and contractors in 2011, we made the players focus their attention on installation of simpler hydronic systems for central heating at lower costs. The winners of the tender competition will install simple and less expensive renewable heating plants in office buildings and apartment buildings according to the TEK 10 and passive house standard.

There was significant interest in the Biogas Production Programme in 2011. The programme has been evaluated, concluding that the market for biogas is still considered immature with limited access to the energy product. We therefore want to continue supporting biogas production during the period 2012 to 2014 and by doing so, contributing to the development of a functioning market for biogas.

Potential and trends

A study carried out in 2010 shows that there is still a great potential for conversion to renewable heating. An expected total heating need of just over 43 TWh in buildings and the industry was mapped in 2010. The potential is particularly great within individual buildings and clusters of buildings.

Bioenergy is the dominating energy source in the projects that have received support this year, and bioenergy is the primary source for slightly less than 70 per cent of the energy result. The 2010 study of potentials shows that small communities have the greatest potential for district heating based on bioenergy. In 2011, a study was initiated for more detailed mapping of the possibilities for utilising bioenergy in industry, and this provides a basis for targeted efforts.

At the same time, applications for the Heating Plants Programme show that heat pumps are particularly suited for supplying individual buildings.

Ambitions and strategy
As a primary rule, investment support is granted to projects that convert to renewable heating as near the end-user as possible. But in the work on making renewable heating the preferred heating solution, Enova wants to focus on the entire value chain.

Increased access to renewable heating through less expensive and simple installations for central heating, innovation in district heating and sustainable value chains for fuel are some key terms in this context.

Communication which highlights the good examples of innovative heating solutions, the good conversion projects, and district heating as an attractive product are elements in this strategy.

In short

HELLE H. GRØNLI
Head of unit

What has been most gratifying for you as head of the unit in 2011?
That the Heating Plant Programme was so well-received in the market.

What posed the biggest challenge in 2011?
The increasing capital costs for heating projects.

What are your ambitions for 2012?
A continued high energy result through a strong increase in the number of applications for the heating programmes. This requires more visibility in the market and a focus on renewable heating as an attractive product.

Renewable Heating
Facts 2011

Support programmes within the unit:

District Heating - New Establishment
District Heating - Infrastructure
The Heating Plants Programme
- Heating Plants - Simplified
- Heating Plants - Extended
- Heating Plants - Industry (reported under the Industry unit)
- Heating Plants - Buildings (reported under the Commercial Buildings, Public Buildings and Residential Buildings units)

The Biogas Production Programme

Changes in 2011:

2011 was the last year in the three-year thematic efforts in biogas production. A decision has been made to continue the programme for a new three-year period, with minor changes.

The Heating Plants Programme replaced the Small Heating Plants Programme. The programme was divided into several sub-programmes that are better tailored for i.e. the industry and for small heating plants.

Number of applications received:

275 applications

Number of applications approved:

221 applications

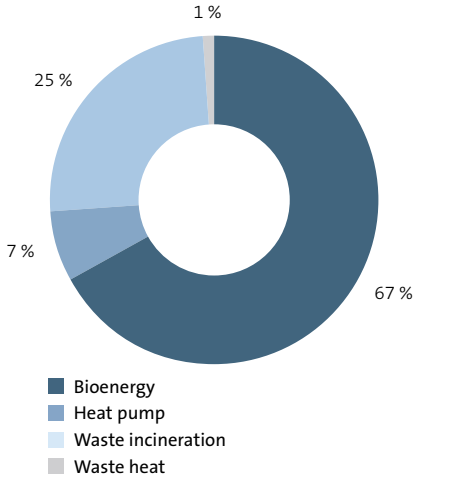
Support allocated:

531 MNOK

Contractual results:

595 GWh
5,416 GWh total (2001 – 2011)

FIGURE 3.1 ENERGY RESULT WITHIN THE RENEWABLE HEATING UNIT IN 2011, DISTRIBUTED BY ENERGY SOURCE



Renewable Power Production:

Wind power support successfully handed over to the electricity certificate market – Enova into new markets

So far, Enova's support for renewable power production mainly comprised investment support for land-based wind power. During the last ten years, we have contributed to the development of 18 wind power projects in Norway, which will produce 2.1 TWh of renewable power production in total. Our role in wind power projects is now changing as a consequence of the establishment of a joint electricity certificate market for Norway and Sweden. Our focus will shift from financing the major development projects to being a driving force for introduction of new technology for production of renewable power. Through supporting the innovative power production companies that want to utilise new technology, we will achieve a more rapid introduction of efficient power production and use of new energy sources.

Barriers and possibilities

In the future, Enova will focus on introduction of new technology for renewable power production. In this connection, we will work to break down barriers related to financing and conservative end-user markets.

Norway holds some of the world's best resources for renewable power production, particularly for offshore wind power production. In the future, it will be interesting to utilise these resources. Our experience from industry establishment – within relevant energy and environment technology sectors such as marine, hydropower and oil and gas recovery offshore – gives us a major advantage in relation to efficient resource deployment.

Result in 2011

No support for new wind power projects was granted in 2011. This is in accordance with what we communicated to the market already in 2010.

In 2011, NOK 782 million was disbursed to the wind power projects in Enova's portfolio. Following the projects in the wind power portfolio closely contributes to ensuring that progress is up to pace. In the last year wind power projects we have worked with for several years have taken major steps forward. 2011 saw the opening of wind power plants including Mehuken II in Sogn og Fjordane County and Høg-Jæren Energy Farm in Rogaland County.
In September 2011, ground was broken at Midtfjellet Wind Farm in Hordaland County. This marked the start-up of the final project in Enova's wind power portfolio.

Interest and activity level

The difficult situation in the financial markets has been the single most important external impact factor in 2011. This has been particularly challenging for capital-intensive, new technology projects within renewable power production, and has contributed to the fact that there were no applications within development of new technology for power production in 2011.

However, hard times have also led to the decline of wind turbine costs during the year due to lower demand on a world-wide basis. This has been important for the developers and project owners to be able to realise their projects in a sustainable manner.
Throughout the entire year there has been a good and close dialogue with decision-makers in several potential projects. It is clear that there is a need for such a dialogue. It is difficult to advance the projects, both internally and externally. An early dialog with Enova is therefore important to receive advice and guidance – and for the project developers to feel certain their projects will be qualified for support.

We can confirm that, without the support granted by Enova, there would not be a Norwegian wind power market today. The gradual development that has taken place has contributed to considerable learning – not just among developers and technology suppliers, but also with several other players. In this process, the public authorities have gradually become better equipped to handle licences and other permits, and the financial institutions have learned to understand the risk of such projects. In addition, an important strengthening of expertise on the part of lawyers, accountants, contractors and several others has developed.

Potential and trends

In the last decade, we and other players have learned a lot about the development of wind power plants. We have moved from individual projects started by enthusiasts to industrial development. There is a good potential for building upon this expertise when developing the possibilities for power production from offshore wind.

In Europe, several comprehensive projects for development of offshore wind are being started. We are making sure that we increase our expertise in offshore-based wind power production. Enova will therefore work with targeted efforts for the development of one or more demonstration farms for offshore wind power. Thus, in a cost-efficient manner, we can

achieve the necessary arena for learning here at home, and be prepared when the major developments come.

Even now we know of several projects operated by solid project owners that could become relevant in 2012.

Ambitions and strategy

It is important to continue following up the projects that arein Enova's portfolio, both because of the projects'-importance by themselves and the considerable project support that has been invested in them.

A close dialogue with decision-makers among technology suppliers, power production companies and innovators with the capacity to implement, will be highly prioritised in the coming years. We both expect and aim for more solid applications in 2012.

The strategy for offshore wind points to a gradual escalation from research and development to large-scale development. In parallel with this, Enova must ensure that we adapt policy instruments and framework conditions for the new challenges. Enova must therefore actively follow-up the initiatives taken by market players that want to develop demonstration plants for offshore wind power production.

In short

RUNE HOLMEN
Head of unit

What has been most gratifying for you as head of the unit in 2011?

The wind power developers we supported have delivered in accordance with the agreements – and more. It is particularly gratifying to see what has been achieved at Høg-Jæren Energy Farm – this is now one of Europe's largest wind farms.

What posed the biggest challenge in 2011?

Challenging markets, both financial and end-user markets, led to a decline in applications and many projects struggling to start-up.

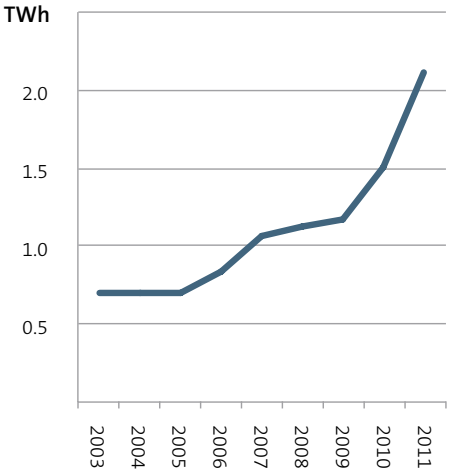
What are your ambitions for 2012?

We would like to be able to support one to three projects within renewable power production. It would be particularly satisfying to grant support to a first Norwegian demonstration farm, five to ten wind turbines, for offshore wind.

Renewable Power Production
Facts 2011

Support programmes within the unit:
The Introduction of New Technology Programme[1]
Changes in 2011:
The Introduction of New Technology Programme was adjusted and expanded, which included incorporating the Marine Renewable Power Production Programme into it.
Contractual results:
2,095 GWh total (2001 – 2011)

FIGURE 3.2 START-UP OF BUILDING ACTIVITY FOR THE WIND POWER PROJECTS SUPPORTED BY ENOVA



The energy results are here sorted under the year when partial disbursement of support began, which indicates start-up of construction.

1 The *Introduction of New Technology Programme* is reported under the New Technology unit.

Industry:

An energy-efficient industry powered by renewable energy

Norwegian industry represents a third of the land-based energy use in Norway. The industry sector includes everything from the bakery industry/bakeries and small companies to smelting plants and chemical process plants with several hundred employees at one facility. For some, energy is a considerable input factor, but for the great majority, energy constitutes only a small percentage of the costs, and thus receives little attention. There is a considerable potential for energy efficiency and conversion to renewable energy sources within industry. Our task is to break down barriers with both large- and small scale enterprises.

Barriers and possibilities

Five basic barriers prevent realisation of energy efficiency in industry: Inadequate external infrastructure, immature technology, deficient commercial attractiveness, limited access to capital and low awareness and expertise.

We challenge these barriers together with market players and other parts of the public policy system. The overall goal is to contribute to Norwegian industry realising its potential for energy efficiency and conversion to renewable energy sources. This enables us to have an energy-efficient industry powered by renewable energy.

Result in 2011

In 2011, the total result of Enova's contracts with the industry equalled 130 GWh. This is considerably lower than previous years and is caused by major single projects from energy-intensive industry being put on hold in a challenging financial market.

The number of projects, in total, was well above the level for previous years. The overall contractual result in relation to the industry sector since 2001 is 4.3 TWh. More than NOK 1.3 billion in support has been allocated to these projects. Enova works closely with the industry and continuously is in dialogue on several significant projects.

Interest and activity level

2011 was the year when the large projects were put on hold while the smaller projects found their way to Enova. There was increasing optimism in the industry early in the year. The ferro-alloy industry was going full force and the aluminium industry was planning to start-up lines that were shut down in 2009. However, the unsettled situation in the global financial markets during the autumn of 2011 put a stop to many of the immediate plans. At the same time, we see that international market players that have invested in Norwegian industry have clear ambitions for further efforts and investments for the future.

The interest in Enova's instruments in such a context has been considerable and it is evident that many interesting projects will start up in the next three years.

Our new programme for pre-project support has hit the spot and a number of companies have started assessing major investment projects that could result in new applications to Enova for investment support.

We see that Enova's cooperation with the FeS/Si industry brings Norwegian industry forward as world-leading within energy efficiency. The energy recovery projects the industry is about to realise bring forth new technology that will not just benefit Norwegian industry, but will lift the standard for the entire world's FeS/Si production.

At the end of February 2011, construction started at Finnfjord in Troms County. The country's largest energy recovery plant is being built here. The project received support from Enova in 2009 and is pioneering in terms of large-scale energy conservation. The facility will be operational by the end of 2012 – and will eventually produce 350 GWh of electrical power, which corresponds to an energy production in the size order of more than half of the hydro power plant in an Alta (in Finnmark County).

In 2011, a designated programme aimed at the industry's heating plants came in place, with the goal of triggering conversion to renewable energy in smaller industry companies. By the end of the year, 15 projects were supported.

A large number of projects were finalised during 2011. Among these are Miljøgartneriet at Jæren in Rogaland County. The choice of energy-efficient solutions here has contributed to reduced energy use, and the heating comes from waste heat recovery from the nearby area. In addition, CO_2 is captured from a nearby dairy farm and stored in the tomatoes – carbon capture and storage in its simplest form!

Potential and trends

Several studies show a significant potential for energy efficiency in the industry. Up to 2020, between 10 and 15 TWh could be released if the industry implements all potential efficiency measures. In addition come the potentials through conversion to renewable energy, which will be assessed in more detail in 2012. In particular, addressing the most easily achieved measures is important. If the industry strengthens its expertise and awareness related to energy use, efficiency measures could be implemented that will trigger a potential of more than 5 TWh.[2] Competent and conscious market players do the

right things and demand the best solutions. This leads to market development on both the service and measure sides. Furthermore, Enova will place emphasis on addressing the potential for waste heat recovery, particularly from power production.

Ambitions and strategy
We will continue being "hands on" in relation to energy-intensive industry to contribute to trigger the considerable investments in potential projects that are readily available. At the same time, we will continue to strengthen our efforts on behaviour change, technology development and innovation.

The programme, in addition to our investment support programme, will include more services – particularly services that to a greater degree than before include small and medium sized companies. Energy management will be a focus area in the years to come.

In short

MARIT SANDBAKK
Head of unit

What has been most gratifying for you as head of the unit in 2011?
We are well on our way to establishing the Norwegian ferrosilicon and silicon plants as internationally pioneering within this area, and as driving forces in a development that can take the global industries to new levels.

What posed the biggest challenge in 2011?
The industry's challenges in an uncertain financial market also affect Enova. The industry's general annual investments have been cut in half since the peak in 2008, which also challenges investments in energy efficiency and renewable energy.

What are your ambitions for 2012?
In 2012, we will put in place schemes that contribute to putting energy management on the agenda on a completely new level in the industry. This will be a significant contribution to breaking down barriers connected to expertise and awareness. We will continue to strengthen the work on having all Norwegian smelting plants implement energy recovery.

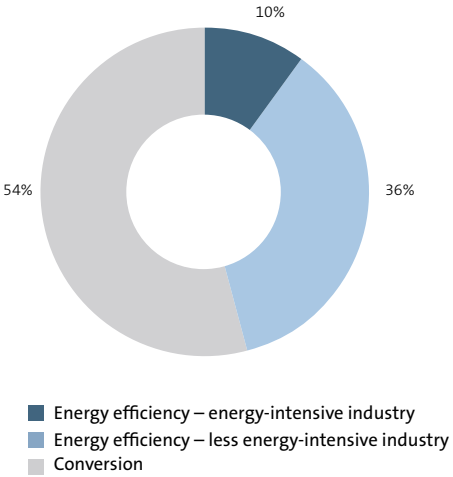
2 Enova report 2009:5 – Potential for energy efficiency gains in Norwegian land-based industry, prepared by McKinsey for Enova (2009).

Industry
Facts 2011

Support programmes within the unit:
Pre-project Support for Energy End-Use Projects - Industry The Energy End-Use - Industry Programme The Heating Plants - Industry Programme
Changes in 2011:
The investment support programme Energy use in Industry was revised and re-launched in February, with clearer and adjusted criteria. We have, for instance, lowered the requirements for energy goals for the projects and opened for the possibility for a higher support percentage. The programmes for pre-project support and for heating plants are new this year. The programme heating plants industry is a joint effort between the Renewable heating and Industry units.

Number of applications received:
79 applications
Number of applications approved:
53 applications
Support allocated:
NOK 63 million
Contractual results:
130 GWh in 2011 4,633 GWh total (2001 – 2011)

FIGURE 3.3 DISTRIBUTION OF ENERGY RESULTS IN 2011 WITHIN THE INDUSTRY UNIT



New Technology:

New energy technology is a competitive advantage for Norwegian industry

Innovation and development of new technology is a precondition for a lasting, environmentally friendly conversion to renewable energy sources.

Enova contributes to market introduction through support for introduction of new technology in the Norwegian energy market. Enova plays an important role in connection with realising the first installations so these projects can function as reference projects.

However, the road from innovation to commercialization is long and challenging. Enova therefore depends on being part of a well-functioning innovation chain – in which the Norwegian Research Council and Innovation Norway also play important parts.

Barriers and possibilities

What drives innovation and technology development? In a commercial market, prospects for profitability and a future market will always be the most important drivers.

The market players' expectations for rising energy prices due to harder access to fossil energy sources and accelerating climate change, form the background for the market being willing to pay for new energy technology.

The financial situation and political uncertainty regarding framework conditions, have made it particularly challenging to get financing in place after the financial crisis.

Result in 2011

The projects supported within the New Technology unit are characterised by being single demonstration facilities, which do not themselves necessarily yield significant energy results. However, we prioritise supporting the technologies that are expected to contribute to high energy production or high efficiency rewards in the next stage, when the technology is ready to take the next step out in the market.

2011 has been a year where industry projects have played an important role. All six projects that were supported within the area are industry projects. Since industry projects usually have good returns in energy result per NOK allocated in support, the energy result in kWh per NOK in support for last year's six projects is relatively good.

Interest and activity level

The demanding situation in the financial markets is the single most significant factor affecting the energy results in 2011.

Despite the industry sector being severely impacted, it seems as if several of the major industry companies are used to handling this type of challenge. The markets in which they operate have always been cyclical, and many have experienced that stopping all technology development in hard times is not the right thing to do.

Since Enova was established in 2001, there have been increasing efforts within power production from low temperature waste heat. In 2011, a funding commitment was granted for the first so-called ORC turbine for power production from industrial waste heat in Norway. At the aluminium manufacturer Alcoa's plant in Mosjøen in Nordland County, the French industry group Alstom will install a unit for energy recovery from low temperature waste heat. If this is successful, it will pave the way for many such installations.

Enova is experiencing considerable interest in the activities that are operated under the direction of the New Technology unit. Many companies and people who contact Enova for support are in a phase that is too early for market introduction, in which case they are referred to Innovation Norway or the Norwegian Research Council. However, contact with the project initiators in the early phase is important in order to follow these projects up to the maturity level we require. We have many good examples of projects that Enova has followed over several years.

Potential and trends

It is easy to point to the vast technical potential that lies in new energy technology. It is more challenging to assess the financial and market potential. The Government-appointed Energy21 Committee was therefore tasked with preparing a strategy for research, development, demonstration and commercialisation of new energy technology, and delivered its final report in June 2011.

One of the areas pointed out by Energy21 is power production from low temperature waste heat. This has been a prioritised area by Enova for years, and the technical potential is extensive. We believe that if the technology development we actively promote is implemented in the market, most industrial waste heat sources of a certain size and temperature will be exploited and recovered in a few decades. This will mean a significant contribution to strengthening the energy balance and security of supply in addition to contributing to securing Norwegian industrial jobs.

Ambitions and strategy

It is important that Enova's New Technology unit clearly defines its role in the innovation chain. Continued sound collaboration with Innovation Norway and the Norwegian

Research Council is therefore very important.

The activity must be adapted to the market's need – particularly the need for testing and verification of technology. In cooperation with Enova's Renewable Heating, Industry, Commercial Buildings, Public Buildings and Residential Buildings units, specific technology areas for establishment of demonstration prospects will be emphasised.

Although our services will always be open for everyone, Enova will prioritise working with solid companies and projects to ensure the best possible ability to implement.

In short

RUNE HOLMEN
Head of unit

What has been most gratifying for you as head of the unit in 2011?
The broad and sound cooperation between Enova and industry companies is inspiring, and cas be used as an example for collaboration with other market areas, the construction sector in particular.

What posed the biggest challenge in 2011?
A lack of access to capital among investors. When the willingness to invest is generally low, it is difficult to motivate for testing new technology.

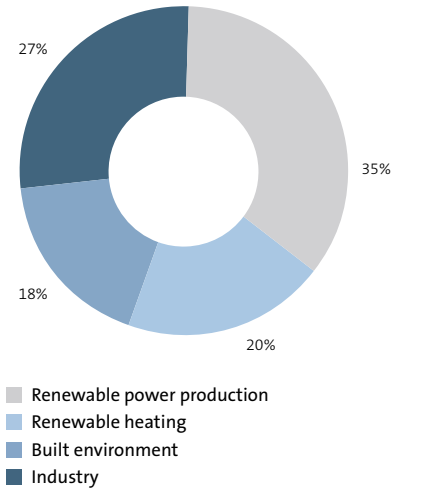
What are your ambitions for 2012?
It would have to be to be able to support one to three major projects within each of the market areas; the built environment, heating, industry and renewable power production. We are looking for major investments in projects with significant energy potential that lead to lasting change – and in doing so thus trigger even larger investments.

New Technology
Facts 2011

Support programmes within the unit:
The Introduction of New Technology Programme
Changes in 2011:
The Innovative Energy Solutions Programme was finalised in 2011, since this area is covered by Innovation Norway. The Marine Renewable Power Production Programme was incorporated in the Introduction of New Technology Programme.

Number of applications received:
12 applications
Number of applications approved:
6 applications
Support allocated:
NOK 28 million
Contractual results:
27 GWh in 2011 145 GWh total (2001 – 2011)

FIGURE 3.4 PROJECTS WITHIN THE NEW TECHNOLOGY UNIT, BY SECTOR



Distribution based on number of applications supported in 2002-2011.

Commercial Buildings:

Energy-efficient buildings turn added costs into added value

Enova's Commercial Buildings unit targets the commercial real estate market. This is a large and complex market with players and owners that consist of many small and medium-sized companies, in addition to a few large companies with a high market share. Private commercial buildings constitute about 85 million square metres of floor area in Norway, with an annual growth of about 2.5 million square metres in new constructions.

In this market, investments are always considered in relation to the capital placement's potential return. Enova enters into partnerships with ambitious players that see the additional value in investing in the future-oriented energy solutions.

Barriers and possibilities

Through clear communication, advice and investment support, Enova will highlight the energy solutions that could increase the buildings' future value.

Reaching a large and fragmented market is a big challenge. We therefore focus our efforts towards leading market players that, in cooperation with us, are motivated to contribute to lasting market change. Our goal is to contribute to passive houses comprising a considerable percentage of new construction, and that energy measures within existing buildings follow this.

Result in 2011

The private commercial buildings market has reacted positively towards Enova's programmes. This has generated good energy results. The response to the programmes for passive houses and low energy buildings was particularly positive, and this constitutes a significant part of the energy result in 2011. The majority of the good energy result comes from existing buildings, and originated from major projects that each include several properties. In particular, the result has been generated through energy measures in the shopping mall and grocery store segment. We also see a positive development in the number of applications coming from the segments for office and hotel buildings. We expect a continued increase in number of applications in 2012.

Interest and activity level

In 2011, Enova has experienced a building and real estate market where there is an increased focus on green and sustainable buildings. We have received many applications from real estate developers and building owners that wish to further assess the feasibility of building their projects in accordance to the passive house standard. This offer makes it easier to set ambitious targets. The assessments result in applications for investment support for building passive houses or renovating to a passive house level.

The concept for passive houses contributes to a focus on quality in all stages – from early design, on to the construction phase and delivery. The leading players in the market have understood that such a high quality is advantageous, and also gives a high classification in BREEAM-NOR and the best energy label. With support from Enova, they are capable of making investments in an early phase, which contributes to added value and value creation in a long-term perspective.

We have received a record number of applications through the programme for existing buildings and outdoors facilities. The application typically follows as an extension of the building owner energy-labelling the building, followed by carrying out a thorough condition analysis of it. In 2011, Enova has received a large number of applications from small and medium-sized players, with relatively small energy results per project (0.1 – 0.5 GWh). Even though this does not yield a large energy result, in total, we believe it has been an important contribution to trigger energy measures in this part of the market. The energy result from the Commercial Buildings market unit has mainly come as a consequence of investment support to a number of portfolio applications (applications that comprise many buildings) from major players such as Norgesgruppen, ICA, Entra, Telenor, Avinor and Amfi. In addition, we have supported Hoegh Eiendom, Halliburton, Ticon, Bunnpris and Mantena.

Potential and trends

Enova's Potential and Barrier Study[3], sets the technically feasible potential within existing commercial buildings in the private sector at about 12.9 TWh, and it will be financially profitable to implement about 5.9 TWh of this.

We can see that the market is in the process of changing. There is a greater demand for future-oriented solutions, and the market is more willing to pay for this. Through Enova's support schemes for passive houses, buildings are realised that have twice as good a standard than what is required by law in technical regulations. This elevation of standard now taking place helps get the market moving.

The individual new construction projects alone only constitute a small part of the energy efficiency potential. However, the considerable increase in quality is an important driver to change the real estate market both for new and existing buildings, and it is taking place faster than before.

Ambitions and strategy
Enova will continue to aim for improving the energy performance for new and existing commercial buildings considerably. We will do this through advising, supporting the performance of passive house feasibility studies and giving investment support for building and renovating buildings in compliance to the passive house level. Our goal is that a clear quality differentiation will have a positive after-effect and contribute to more measures with high energy quality requirements in existing buildings. The International Energy Agency (IEA) has determined that it is completely necessary to improve energy efficiency to reduce the world's greenhouse gas emissions. It is therefore of considerable importance that energy efficiency becomes the most important quality criteria when classifying green, sustainable buildings.

In short

CHRISTIAN HEMMINGSEN
Head of unit

What has been most gratifying for you as head of the unit in 2011?
The private real estate market is changing. The leading market players are taking social responsibility and leading the way by choosing future-oriented energy and environmental solutions that result in increased competitiveness.

What posed the biggest challenge in 2011?
The development in the new construction market is positive, but it is still challenging to speed up the pace for raising the energy performance in the segment of existing buildings. Luckily, the trend in the market indicates that there will be more rehabilitation projects with ambitious energy targets in the future.

What are your ambitions for 2012?
We are aiming towards an even higher energy result in 2012, even though there is great uncertainty associated with the willingness to invest in the private market due to the financial worries. We believe the Norwegian real estate market will continue to develop. For building owners, it will be sensible to invest in energy and environmental measures that improve the quality of the buildings and provide a future value increase.

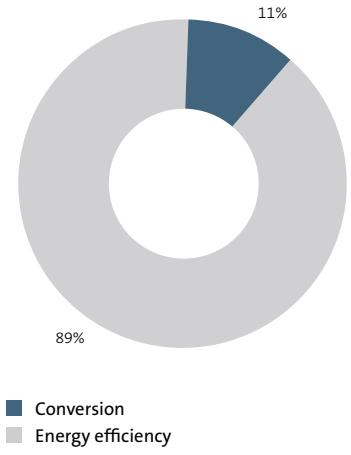
3 Enova report 2012:1.2 – Improving Energy Efficiency in Norwegian Non-Residential Buildings, prepared by Multiconsult for Enova (2011).

Commercial Buildings
Facts 2011

Support programmes and other key programmes within the unit:
Investment Support for Passive Houses and Low Energy Buildings Investment Support for Existing Buildings and Outdoor Facilities Support for Passive House Feasibility Studies Support for Heating Plants – Buildings[4] Enova's Advisory Team for Passive Houses[5], including - Start-up courses in planning passive houses - Introductory advising/workshops - Advising in architecture competitions - Advising/workshops in the detailed engineering and/or construction phase

Number of applications received:
155 applications
Number of applications approved:
121 applications
Support allocated:
NOK 323 million
Contractual results:
320 GWh in 2011 3,041 GWh total (2001 – 2011)

FIGURE 3.5 DISTRIBUTION OF ENERGY RESULTS IN 2011 WITHIN THE COMMERCIAL BUILDINGS UNIT



4 Support for *Heating Plants - Buildings* is considered a measure under other support programmes.

5 Reported under activities for the Public Buildings unit.

Public Buildings:

Energy plans in place for municipal Norway

Buildings owned by the Government, county or municipality with associated enterprises constitute a large part of the buildings in Norway. In total, the public sector manages about 43.5 million square metres of the buildings, equalling 34 per cent of all commercial buildings in Norway.

International and national policy points to the public's responsibility as a pioneering player within energy use in buildings. If we look at initiated projects, there are relatively few public building managers that have taken on such a role in Norway to date, but several are on the way. The evident political will is a good basis for triggering more energy projects.

Enova's role is to promote good projects by adapting the policy measures to the specific challenges in the public sector. The measures are set up and carried out to create lasting change in the market.

Barriers and possibilities

At the end of 2011, approx. 360 of 430 Norwegian municipalities had completed their energy and climate plans with support from Enova. These plans contain ambitious goals both for energy efficient new buildings and for measures in existing buildings. Some have gone from planning to action, but most still have a major unrealised energy potential. Access to capital and expertise – and own project manager capacity, are among the most important barriers that prevent the municipalities from extracting this potential. This, in combination with more complex decision processes and stricter procurement rules, can make the road from intent to action more demanding for public players than private.

The Directorate for Public Construction and Property, Norwegian Defence Estates Agency, universities and health authorities also have buildings with major energy potential and Enova has a strong desire to cooperate with these organisations to recover the potential.

Result in 2011

Our figures show that the public buildings unit has contributed energy efficiency measures totalling 210 GWh in 2011, which is a considerable increase from previous years.

This positive development shows that the new programmes satisfy a need in the market and that these programmes, in combination with frequent use of Enova's Advisory Team – are now yielding results.

Interest and activity level

In 2011, Enova organised the course series *Energy-Efficient Buildings for the Future* with the municipalities as the target group. The scheme was very popular, and 566 participants from 210 municipalities and 15 county municipalities show that the topic is relevant. In the extension of the courses, many of the participants have been in dialogue with us regarding specific projects.

In 2011, the Norwegian Defence Estates Agency received support for Phase 2 of an effort lasting several years. This project places the Norwegian Defence Estates Agency as one of the most ambitious and active public building administrators as regards energy efficiency measures in existing buildings.

The Directorate for Public Construction and Property is now carrying out energy labelling in combination with condition analyses of their buildings. In the future, the Directorate for Public Construction and Property will use the potential uncovered in this work as a basis for energy efficiency projects.

Both small and large public building administrators show interest in building energy-efficient new buildings, with the passive house standard as the most common level of ambition. Several day care centres, schools, assisted living facilities and cultural buildings have applied for support to build to a passive house standard, and even more are in the assessment phase. A significant expertise development is taking place on both the procurer and supplier side in new buildings and renovation projects where passive house level is the quality requirement, and Enova's Advisory Team is a requested service.

We also see that support programmes targeting existing buildings get comprehensive projects where several measures can be carried out at the same time. Projects that include multiple buildings where a large percentage of the applicant's buildings are included often apply for support. *Enova project* has become a term in the market to signify comprehensive energy efficiency projects.

Potential and trends

Enova's Potential and Barrier Study[6] has defined the technically feasible potential for energy efficiency in public buildings up to 2020 at about 6.6 TWh. Of this, about 3 TWh is considered the financially profitable potential.

The Norwegian Defence Estates Agency and some other public market players are leading by example, showing that it is possible to reduce energy use significantly in the public buildings. It is positive that passive houses have an important place in the new environmental strategy the Directorate for Public Construction and Property launched in 2011.

The advising engineers association's report on the condition of buildings and infrastructure *State of the Nation*[7], draws a bleak picture – particularly for municipal buildings. A major maintenance lag is a challenge, but Enova also considers this an opportunity because extensive maintenance projects are a good starting point for interesting energy projects.

Ambitions and strategy

Norwegian building habits must change in order to build the future's energy-efficient buildings, and our efforts in passive houses will continue to stimulate this change.

We have defined a good strategy for dealing with the most important barriers in the municipalities' energy efficiency work – i.e. deficient access to capital, capacity and expertise. In cooperation with the Norwegian Association of Local and Regional Authorities, Enova will put efforts into Energy Performance Contracts (EPC), where external expertise and financing is paid back through the energy savings. We will help public building administrators lead the way.

In short

TOR BREKKE
Head of unit

What has been most gratifying for you as head of the unit in 2011?

The work that Enova, in cooperation with Oslo and Drammen, is carrying out with FutureBuilt – a ten-year programme with a vision to develop climate-neutral urban areas and high quality architecture. This project has active and ambitious players that show how much can be achieved when it comes to energy efficiency measures in commercial buildings. The National Defence Estates Agency and Kristiansand Municipality in Vest-Agder County are good examples of players that have worked well for many years, and have gone further in 2011.

What posed the biggest challenge in 2011?

That only a few public building administrators are implementing good energy projects. The major challenge is getting the entire spectrum of public market players to follow their example.

What are your ambitions for 2012?

Helping even more public building administrators to take the step from word to action and thus continue the positive development within public buildings.

6 Enova report 2012:1.2 – Improving Energy Efficiency in Norwegian Non-Residential buildings, prepared by Multiconsult for Enova (2011).

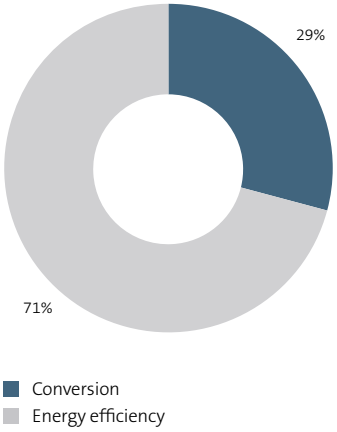
7 «State of the Nation», report prepared by multiple RIF firms on assignment for the Advisory Engineers Association (2011).

Public Buildings
Facts 2011

Support programmes and other key programmes within the unit:
Targeting municipalities:
Pre-project support, for improving energy efficiency and conversion in municipal buildings and facilities Pre-project support, for heating and infrastructure
Targeting all public developers and building administrators:
Investment Support for Passive Houses and Low Energy Buildings Investment Support for Existing Buildings and Outdoor Facilities Support for Passive House Feasibility Studies Support for Heating Plants – Buildings[8] Enova's Advisory Team for Passive Houses, including - Start-up course in planning of passive houses - Introductory advising/workshops - Advising in architecture competitions - Advising/workshops in detailed engineering and/or building phase

Number of applications received:
117 applications
Number of applications approved:
106 applications
Support allocated:
NOK 191 million
Contractual results:
210 GWh in 2011 251 GWh total (2010 – 2011)

FIGURE 3.6 DISTRIBUTION OF ENERGY RESULTS IN 2011 WITHIN THE PUBLIC BUILDINGS UNIT



8 Support for *Heating Plants - Buildings* is considered a measure under other support programmes.

Residential Buildings:

A record number received energy advice from Enova

The Nordic climate contributes to Norway having a particularly high demand for energy for light and heating. During the last decade, we have also experienced a revolution within information technology. This creates a need for stable supply of energy – always and everywhere.

Enova will contribute to the households being able to cover these different needs in an energy-efficient manner, by enabling energy choices for good living. Through advise and financing, we will open the market for products and services with better energy performance, both within new buildings and renovations.

Barriers and possibilities

Energy use in households constitutes 27 per cent of stationary energy use in Norway. The potential for further efficiency measures is considerable, particularly within heating. The residential sector consists of decision-makers in 2.2 million households in single-family dwellings, small houses and flats/apartment buildings. These must make the "correct" decisions related to energy use, under framework conditions that vary significantly from household to household. Increased comfort and a better indoor climate are important motivators for carrying out an energy upgrade of the residence. Seen in context with the Energy labelling scheme, this could also result in increased value and attractiveness for the residence.

Result in 2011

In 2011, an energy result of 62 GWh was contracted, of which 51 GWh is related to Enova's household subsidy programme. In previous years, the results for residential building projects have been reported under Enova's Public Buildings and Commercial Building units.

We experienced increasing interest in passive houses among developers and house manufacturers in 2011, a development we expect will continue in 2012.

Interest and activity level

Projects with ambitions to build new or renovate to a passive house standard can receive initial advice from Enova, and 33 projects received this in 2011. A steadily increasing number of house manufacturers offer passive houses in their catalogues.

Cold winters and high electricity prices greatly affect the interest in energy issues. Our nationwide information helpline Ask Enova received nearly 45,000 household-related inquiries in 2011, which is a record high number.

Enova's household subsidy programme *Enova Supports* subsidises products for alternative heating and saving electricity for households, received just under 8,000 applications. The high interest in heat pumps for central heating systems continues.

During the spring of 2011 we launched the campaign *Norway's Coldest House*, which focused on insulation and replacement of windows. Enova has contributed to a clear market change for low energy windows. Many Norwegian manufacturers now offer windows that satisfy this quality requirement in their product selection, and more and more people are demanding low energy windows. In 2011, 15.6 per cent of all windows sold were triple-glazed low energy windows. The corresponding figure for 2010 was 8.5 per cent.

Children and youth are an important target group for Enova. They represent the future's decision-makers and energy users. Through the Rainmakers educational concept, Enova gives responsibility, knowledge and tools to young people to make a difference when it comes to energy conservation and energy use. Each year, a gathering is organised for Rainmaker children, called the Rainmakers' Day. In 2011, this big event was organised in Tromsø in Troms County with nearly 5,000 participating pupils and teachers.

There are many older apartment buildings that now face major renovations. Along with the Norwegian State Housing Bank and the Co-operative Housing Federation of Norway (NBBL), Enova had a special focus on upgrading housing cooperatives in 2011. We carried out a seminar series in eight cities across the country with over 1,000 participants and very good response.

Potential and trends

Considerable building activity is ongoing in the residential sector, and it is expected that about 30,000 new homes will be built each year leading up to 2020. An increasing number of these buildings are now being built as passive houses or low energy houses.

An estimated 30,000 homes undergo extensive renovations each year. Enova's potential and barrier study[9] shows that there is a great technical potential in residential buildings, but the financial potential is relatively small if the cost of implementing major energy measures is to be covered by the energy savings alone. At the same time, there are a number of individual measures related to the actual building, technical equipment and energy behaviour that could be profitable, depending on the characteristics of the individual home and household.

Ambitions and strategy

Enova's goal is that construction and extensive rehabilitation of buildings comply withthe passive house standard by 2020. In order to reach this goal, Enova supports products, technologies and energy solutions in the early phases of market development. In cooperation with industry actors, Enova will contribute to developing both the supply and demand sides. Enova's instruments are applied in a targeted manner to support innovators and ambitious projects.

Existing homes will be an important part of the residential building stock for many years to come. Many people undertake major or minor upgrades of their own homes during the course of a year, and an important strategy for Enova is to encourage these people to choose the best energy solutions and products. Information and advising in combination with financial support will be key instruments to achieve this.

In short

MERETE KNAIN
Head of unit

What has been most gratifying for you as head of the unit in 2011?

The fact that awareness concerning passive houses is increasing and that the interest in ambitious energy renovations in housing cooperatives is on the rise.

What posed the biggest challenge in 2011?

That there is still little interest in renovating existing homes to a passive house or a low energy standard. It is therefore important to promote good demonstration projects to show the feasibility of such renovations.

What are your ambitions for 2012?

To further develop the services we offer for existing homes and contribute to more passive houses being built.

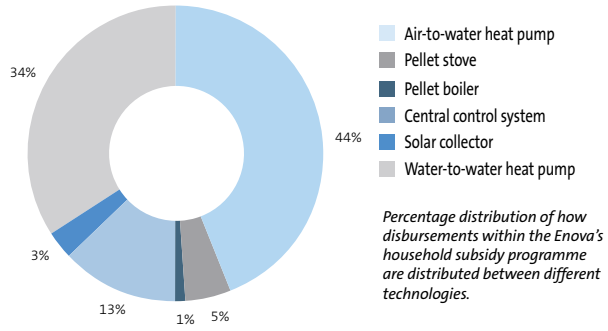
9 Enova report 2012:1.1 Improving Energy Efficiency in Norwegian Residential Buildings, performed by the Prognosis centre for Enova (2011)

Residential Buildings
Facts 2011

Support programmes and other key programmes within the unit:
Investment Support for Passive Houses and Low Energy Buildings Investment Support for Existing Buildings and Outdoor Facilities Support for Passive House Feasibility Studies Support for Heating Plants – Buildings[10] Enova Supports (the household subsidy programme) Enova's Advisory Team for Passive Houses[11], including - Start-up course in planning of passive houses - Introductory advising/workshops - Advising in architecture competitions - Advising/workshops in detailed engineering and/or building phase Ask Enova (the information helpline) Enova Recommends (recommended products) Enova At Home (energy advisory service for households) Enova Rainmakers (energy awareness programme for children)
Changes in 2011:
Enova Supports was included under the Energy Fund effective from 1 July 2011.

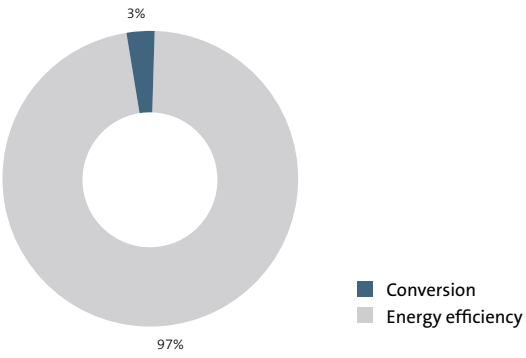
Number of applications received:	Number of applications approved:
7,969 applications[12]	7,906 applications[13]
Support allocated:	**Contractual results:**
NOK 111 million[14]	62 GWh in 2011

FIGURE 3.7 SUBSIDIES FOR HOUSEHOLDS UNDER THE ENOVA SUPPORTS PROGRAMME, DIVIDED BY TECHNOLOGY (2011)



Percentage distribution of how disbursements within the Enova's household subsidy programme are distributed between different technologies.

FIGURE 3.8 DISTRIBUTION OF ENERGY RESULTS WITHIN THE RESIDENTIAL BUILDINGS UNIT IN 2011



10 Support for *Heating Plants - Buildings* is considered a measure under other subsidy programmes.

11 Reported under activities for the Public Buildings unit.

12 Of which 7,866 applications were for the household subsidy programme. Some of these are outside the Energy Fund.

13 Of which 7,824 funding commitments under the household subsidy programme. Some of these are outside the Energy Fund.

14 Of which 98 MNOK is within the Energy Fund, which has yielded an energy result of 62 GWh.

International activities:

Enova's involvement on international matters

The international activities that we engage in provide us with a learning arena for sharing experience and expertise. Through international cooperation and involvement, Enova shares and gathers information on ongoing activity and best practice in other countries. The knowledge this provides is used to shape efficient national policy instruments.

Participation in international forums gives Enova and Norway the chance to influence the agenda, content and results of international energy development.

Enova is represented in several international forums:

- Management of the EU programme Intelligent Energy – Europe in Norway
- Participation in seven of the International Energy Agency's (IEA's) Implementing Agreements (IA) Executive Committees and projects organised by these
- Participation in the European Energy Network (EnR) – a European network for Enova's sister organisations
- Board membership in the European Council for an Energy-Efficient Economy (ECEEE), a European Council for energy efficiency

Barriers and possibilities

It is both necessary and useful to participate in international partnerships to find solutions to common energy and climate-related issues. We therefore cooperate to reach common goals and, to some degree, common framework conditions set by the Energy 2020 strategy and EU directives.

Result in 2011

Enova manages Norway's participation in Intelligent Energy – Europe (IEE), the EU's non-technological programme within the energy area. Through concrete projects, this programme contributes to realisation of the EU's climate and energy targets for 2020. The IEE projects are collaboration projects between several European countries and Enova allocates support for Norwegian project participants. This year we experienced an increase in the number of applications from Norwegian players in relation to previous years.

According to the EU Commission, a total of 22 project applications with Norwegian participation were received within the IEE programme. Of these, three have been approved by the EU Commission and have started contract negotiations. Two of the approved applications have a Norwegian coordinator.

Interest and activity level

In 2011, Enova revitalised its participation in the EnR network. EnR is a European network for Enova and our sister organisations. The network has 24 members from 23 countries. The EnR network is an arena for exchanging knowledge and experience in connection with energy efficiency and renewable energy. This network is a natural consulting partner for the EU Commission in connection with implementation of new directives and development of new policies in the energy field. In 2011, EnR delivered a joint suggestion to the EU Commission on future development of the EU programme Intelligent Energy – Europe within the new framework programme Horizon 2020. Enova participates actively in five of EnR's eight working groups.

Enova is a partner and took active part in ECEEE's Summer Study which was held in June 2011. This year's topic was Energy efficiency first: *The foundation of a low-carbon society*. In 2011, Enova's representative was chosen as the deputy chair of ECEEE's board.

Enova participates in seven of the IEA's Implementing Agreements (IA). Implementing Agreements are different thematic management groups for projects within IEA[15]. To facilitate the establishment of more IEA projects with Norwegian participation and coordination, Enova has established pre-project support for participation in those IEA Implementing Agreements where Enova participates as a member of the Executive Committee (ExCo).

Enova's administration of Intelligent Energy – Europe (IEE) entails marketing the programme vis-à-vis Norwegian market players. This is done in the form of Annual National Information Meetings, participation in the EU's Programme Committee for National Contact Points and the EU Commission's information meetings. We also manage the national support programmes for SAVE – a sub-programme for energy efficiency, and ALTENER – a sub-programme for renewable energy.

In 2011, the IEE programmes opened the door for new financing schemes for projects where public bodies can apply for support for energy efficiency measures. The initiative targets the public sector with the goal of investments in energy efficiency measures and renewable energy. In 2011, the regional council in Sør-Østerdal received support from the EU and Enova under this initiative. Five municipalities in Hedmark County are participating in this project, including both training measures and energy renovation of buildings in the municipalities that are involved.

Potential and trends
Enova works on getting more Norwegian players to use EU projects as a strategic instrument in their development processes. There is a large potential related to getting more qualified players to participate in the IEE programme. One way to contribute to this is to increase the quality of Norwegian applications. This can be achieved through making the applications more professional, e.g. through an application writing course.

Ambitions and strategy
Through our international involvement, we will strengthen our role as a strategic adviser. We will strive for further coordinating and integrating our international activities with Enova's other activities. The focus will be kept on increased cooperation between participants in international forums and the market, and on active communication of project results and information.

In short

ANDREAS KRÜGER ENGE
Head of unit

What has been most gratifying for you as head of the unit in 2011?
The strengthening of the staff we carried out with a dedicated adviser for international activity has given us the opportunity to work in an even more targeted way to get Norwegian participants in EU projects.

What posed the biggest challenge in 2011?
The process related to applying for project support within the Intelligent Energy Europe programme was pushed forward by the Commission compared to previous years. This resulted in very little time between when the Call for Proposals was published by the EU and when the application deadline expired.

What are your ambitions for 2012?
We want to continue the good trend related to participation from Norwegian players in EU projects, and hope for many good project proposals in the 2012 applications round of IEE. We also want to prioritise following the development in key EU Directives closely. In particular, there is quite a lot of anticipation associated with how the new Energy Efficiency Directive will end up, which can have great significance for the further development of Norwegian policy instruments.

15 An overview of Enova's participation in IEA Implementing Agreements is provided in Table 4.26 under reporting of results and activities within international activities.

International activities
Facts 2011

Support programmes within the unit:
IEE Pre-Project Support (for projects within Intelligent Energy – Europe) IEE National Co-Funding IEA Pre-Project Support (for projects headed by the International Energy Agency)
Changes in 2011:
The support programme IEA Pre-Project Support was established in 2011

Number of applications received:
23 applications
Number of applications approved:
17 applications
Support allocated:
NOK 7 million

Communications and Public Relations:

Communication to inspire action

Enova's department for Communications and Public Relations will contribute to Enova being distinctly visible and perceived as a credible and significant enterprise in the market and society. We will lead and coordinate the work on Enova's reputation. Marketing and profiling, press and public relations, internet and social media are important parts of this work. The department is responsible for Ask Enova, an information helpline which is a part of Enova's nationwide information and advising service.

Barriers and possibilities

Enova will inspire enterprises and individuals to embrace future-oriented steps that lead to more efficient energy end-use and more renewable energy production.

Targeted and effective communication activities will reduce barriers in the conversion to renewable energy sources, and highlight the potential and possibilities in environmental and climate-friendly energy solutions that give profitability, reduced greenhouse gas emissions and increased value.

Low awareness of and knowledge about Enova in the market and in society is a considerable barrier. An important goal is therefore to be able to strengthen the reputation and awareness of Enova, and increase knowledge about Enova as an energy and climate policy instrument – and about our services in the market.

Result in 2011

An extensive further development of our website and plan for presence in social media was initiated in 2011, to be completed in the 1st quarter of 2012.

In 2011, analyses were carried out that show the connection between communication efforts and results for Enova in the form of an increased number of applications.

In 2011, we carried out analyses to map the market's and other surroundings' perception of Enova.

TNS Gallup's reputation survey for Enova during the summer of 2011 showed that the trust in Enova is good, and those who have been exposed to communication from Enova have a more positive impression of the organisation than others. The company has strengthened its reputation among important stakeholders, but our reputation is still characterised by the fact that the general public does not know enough about Enova's work and services.

The work on developing Enova's overall and sector-specific message is completed, and a designated communication platform has been established which was summarised in the term – "Change".

Interest and activity level

An extraordinary situation with low water reservoir levels resulted in Enova and Statnett starting 2011 with a joint information campaign to show people and companies how they could reduce their energy consumption in a strained energy situation.

In 2011 the communication work was characterised by a high activity level for marketing Enova's product services vis-à-vis enterprises and individuals.

In the first six months, much of the communication efforts were aimed at villa owners and people who live in housing cooperatives. The campaigns *Norway's Coldest House – 2* and the *Housing Coldoperative* showed possibilities for private individuals and housing cooperatives to choose future-oriented and thrifty energy solutions.

In the buildings area, Enova intensified the communication regarding passive houses, and showed how this provides a basis for efficient and lasting changes within existing and new buildings. A targeted campaign that promoted Enova's building programmes was run in technical press media the entire latter half of 2011.

In parallel with the building campaign, we introduced a campaign for Enova's renewed heating plant programme. The activity contributed to a significant increase in the number of applications in the area in the campaign period.

In 2011, Enova tied its PR work more closely with the marketing activity, and this has had a positive effect on the percentage of published editorial features (which Enova has taken the initiative for). Prototype projects and other good energy projects have, through this work, become more visible in the media.

In 2011, the number of media mentions of Enova was still high. Important key terms in these matters have included wind power, conserving electricity, passive buildings and renewable heating.

We have developed and strengthened our dialogue with important organisations, enterprises and groups in society.

Potential and trends

The market and society can best be influenced through targeted highlighting of the good energy projects through different communication channels. Good energy results that are achieved through profitable projects in the market are the best examples of how change is possible and desirable. Examples that show how players in the market achieve increased profitability and competitiveness through good energy projects, are, and will continue to be, the best way to have an impact on the surroundings. The stronger and more

coordinated the effort is through different communication challenges, the clearer the stories will appear.

Ambitions and strategy
The communication work plays a significant role in fulfilling the company's strategy for *a more significant and distinctive Enova*.

Increased familiarity, knowledge, credibility, visibility and a good reputation will continue to be important success factors for Enova to be a powerful instrument in Norwegian energy and climate policy. An important strategy will therefore be continued highlighting of the good stories where Enova contributes to long-term and lasting market change through good projects both in the private market and industry and business market.

In short

BÅRD BJERKAKER
Chief Communications Officer

What has been most gratifying for you as head of the unit in 2011?
We see that the awareness regarding Enova is increasing and that both the knowledge and reputation are developing in the right direction. Through surveys and analyses, we are highlighting the effect of the communication work in the sense that the increase in the number of applications coincide with communication efforts.

What posed the biggest challenge in 2011?
For several reasons, 2011 became challenging as regards results. It was hard to find the most suitable and targeted communication measures in order to be able to contribute optimally to generate the best possible energy result.

What are your ambitions for 2012?
That Enova, through good and targeted communication work, appears even more prominent and powerful in 2012, and thus further fortifies its position as a suitable energy and climate policy instrument in Norway.

Communications and Public Relations
Facts 2011

Number of inquiries to Ask Enova:
50 458
Number of page referrals for Enova's website:
2 895 238
Number of registered media mentions:
3 900
Number of press releases:
40
Number of marketing campaigns:
9

Natural Gas Infrastructure:

Replaces oil – natural gas has environmental benefits

During the period from 2003 to 2011, Enova has allocated funds for a support programme for natural gas infrastructure. The goal of the programme has been to facilitate increased use of natural gas domestically, and particular emphasis has been placed on the fact that conversion from oil to natural gas has positive rewards for the environment. Conversion from heavier fuel in industry, shipping and transport were prioritised market areas.

Barriers and possibilities

A potential of more than 10 TWh has been mapped, and can be triggered by converting from oil to natural gas in industry, shipping and transport.

A large part of this must take place through using LNG (Liquid Natural Gas). Tankers and tank lorries must be used for transport. A considerable number of LNG receiving and storage facilities at industry locations along the coast must therefore be established in order to deliver gas to the largest and most important industry customers.

The support programme has been designed specially for such facilities. In the period 2004 – 2011, Enova has participated in the financing of nine facilities along the entire coast, and these now constitute a good point of departure for an efficient and safe distribution system for natural gas to Norwegian industry. In addition, natural gas companies and other market players have built similar facilities without support from Enova. It is expected that infrastructure will still be developed in line with the demand for natural gas.

Result in 2011

In 2011, Nordic LNG completed construction and started operations at their LNG facility in Fredrikstad in Østfold County. In 2011, one new agreement was entered into. This agreement includes a project where Skagerrak Naturgass is planning to build a receiving and storage facility for LNG at Herøya in Porsgrunn (in Telemark County). A small facility was previously built on Herøya, but a demand for natural gas from major industry customers makes it necessary to build a facility with considerably greater capacity.

Interest and activity level

The access to natural gas projects has been low during the period 2009 – 2011. It is assumed that this is connected to low activity and ability to invest in Norwegian industry.

The support programme has contributed to a quicker development of infrastructure for natural gas, and in some cases, also the size of the facilities has increased. The access to natural gas has thus improved, and the industry's interest for using gas has increased. Positive operating experiences have also created increased demand. The support programme was set up according to the guidelines that apply for service obligations of general financial significance (Public Service Obligations – PSO).

Enova has developed a general template for designing LNG receiving and storage facilities. This template has been adapted to the indicated service obligations and Norwegian conditions, and this has contributed to the establishment of an efficient and well-functioning commercial logistics chain for natural gas in Norway.

Potential and trends

A potential of more than 10 TWh has been mapped through conversion from oil to natural gas in industry, shipping and transport.

It is expected that natural gas, in particular, will be used more within shipping. Ferries, the Norwegian Coast Guard and supply ships are examples where LNG is already in use, and there is a large potential for increased use within these sectors.

Natural gas will also be a suitable fuel in a transition phase until biogas becomes available in sufficient volumes for bus transport and for other heavy vehicles. An extensive infrastructure for natural gas can also have great significance for the possibilities for producing and distributing biogas.

Ambitions and strategy

New funds have not been allocated to the natural gas scheme in 2010 and 2011. Due to unallocated funds that were transferred from 2009, the financial framework for the programme was still sufficient to carry out the announcements in 2010 and 2011. New funds have not been allocated for 2012, and the support programme is thus in practice finalised.

Facts 2011

- In the period 2004 – 2011, contracts granting financial support were entered into for the construction of nine facilities for LNG receiving and storage
- In total, these facilities have a capacity equalling approx. 5.6 TWh per year
- The expected sales in a perspective of five to ten years are approximately 3.1 TWh
- State aid through the support programme has been in total NOK 152.2 million

Other activities

The Low Energy Programme

The Low Energy Programme is a collaboration between the State and the construction industry to achieve energy efficiency and conversion to renewable energy sources in buildings. The parties involved in the programme are the Federation of Norwegian Construction Industries, the industry organisation Architecture Companies, the Norwegian State Housing Bank, Enova, the National Office of Building Technology and Administration, the Norwegian Water Resources and Energy Directorate and the Directorate of Public Construction and Property. The Low Energy Programme works to enhance and spread expertise in the construction industry. This entails development of course material, development of knowledge, information and experience transfer from passive house projects. The goal is for a large percentage of the buildings being built in 2014 to 2017 to be according to passive house standard. In addition, the Low Energy Programme works to increase the level of expertise in the construction industry regarding energy measures in existing buildings.

Examples of projects under the direction of the Low Energy Programme are development of passive house courses for designers and executing personnel and builders. Course material has been prepared regarding energy efficiency measures in existing buildings along with the Byggmesterforbundet and the Norwegian Mason Contractors' Association and a designated expertise plan for the people who work on design. Installation and renewable heating courses are organised across the country, with the basis in a compendium developed with support from the Low Energy Programme. The Low Energy Programme co-organised the Passive House Conference in Oslo, which attracted more than 600 participants in 2011.

The Low Energy Programme is a project manager for Norwegian participation in the European project Build Up Skills. Together with 20 other EEA countries, a road map will be prepared with concrete measures for increasing expertise in the energy area among the executing parties in the construction industry. The programme is also the project owner for an R&D project which will evaluate residences at a passive house and nearly zero energy level. SINTEF Byggforsk and several other residence manufacturers are participating in the project. It can be challenging to motivate the construction industry to take further education on energy issues. Therefore, the Low Energy Programme also works to include passive house knowledge in the educational programme, together with the Oslo School of Architecture and Design, the Oslo and Akerhus University College of Applied Sciences and the vocational schools in Oslo, to mention a few.

The household subsidy programme

In 2011, Enova continued the programme Enova Supports, Enova's household subsidy programme. Since 2006, funds for the household subsidy programme have been awarded through the fiscal budget. In connection with the Revised national budget in 2011, the programme received an injection of NOK 70 million, at the same time as it was determined that the programme must be included under the Energy Fund. The programme was included under the Energy Fund from 1 July 2011. Enova Supports is an important instrument to develop markets for renewable heating solutions and energy efficiency measures. You can read more about Enova Supports under the Residential Buildings unit.

Energy courses for municipalities

Planning and implementation of energy courses for the municipalities is an activity financed with funds from the Ministry of Local Government and Regional Development (KRD). Remaining funds from the original assignment from 2007, *Energy and Climate Planning in the Municipality*, were transferred to a new course series starting in November 2010. The courses focus on increasing expertise, advising and information on energy efficiency and operation of municipal buildings. You can read more about the municipality courses under the Public Buildings unit.

Energy Technology Data Exchange (ETDE)

Energy Technology Data Exchange (ETDE) is IEA's multinational information programme. Enova was appointed by the MPE to be a Norwegian Contract Party in the ETDE agreement and is the Norwegian representative in ETDE's Executive Committee (ExCo). ETDE deals with collecting and making energy-related literature available in a suitable manner. ETDEWEB is the world's largest energy database and has more than four million referrals to technical energy topics from books, journals, webpages, etc.; several of these are available in full text.

Enova is responsible for following up and financing the work connected to maintenance and operation of the ETDE database from the Norwegian side. Astrid Gudmundseth Bibliotektjenester (AGB) was hired by Enova to carry out maintenance and operation of ETDE's database for Norway in 2011. From 2012, the assignment will be administered internally in Enova. In 2011, 625 new documents and 1,162 new users were registered in Norway. There have been 3,717 Norwegian log-ins to the database. The allocation of NOK 1.8 million over the State budget has been used in its entirety. In 2011, an ETDE user survey was carried out. Fifty-four per cent of the respondents say that they think the information they get from the ETDE database is of average benefit in their work. Fifty-seven per cent of the users completely or somewhat agree that the database provides information that is easy to use in practice. In 2012, an evaluation of the database will be carried out. This evaluation, together with the user survey, will form the basis for deciding whether Norway will continue to be part of the ETDE Implementing Agreement in the new Agreement period from 2014 – 2019.

Intelligent Energy Europe (IEE)

On behalf of the Ministry of Petroleum and Energy (MPE), Enova has managed the EU's non-technological programme Intelligent Energy Europe (IEE) since 2003. Some of the projects within IEE are not covered by the mandate in the Energy Fund. In such cases, Enova is given the opportunity to award Pre-Project Support and National Co-Funding with funds allocated directly over the State budget. No applications within the IEE programme were supported by funds outside the Energy Fund in 2011.

You can find more information on the IEE programme under the description of International activities.

PART 4

Results and activities

Gran District Heating – Gran, Oppland County
Photo: Ivan Brodey.

About Enova – objective, role and results

Enova promotes environmentally friendly restructuring of energy end-use and energy production.

The energy restructuring is a long-term commitment to develop markets for efficient and environmentally friendly energy solutions that contribute to strengthen the security of supply for energy and reduce greenhouse gas emissions.

Enova will contribute to lasting changes in the market.

In light of the objective, Enova manages the Energy Fund. The management is regulated through an agreement with the Ministry of Petroleum and Energy. In addition, we manage funds for developing infrastructure for natural gas, the Low Energy Programme, as well as follow-up of courses and international programmes. Enova's household subsidy programme, which was previously a separate activity, was incorporated in the Energy Fund in 2011.

Through its management, Enova offers financing and advice to the market. We achieve direct results through the projects we enter into. In addition, we achieve indirect results through the overall impact each individual project has on the market, in combination with advising. As the projects are actually implemented. Impacts arise in the market as the projects become operational.

In this year's annual report we are reporting the energy and climate impacts of Enova's overall assignment for the first time, including – but not limited to - the tasks within the Energy Fund. The figures are the sum of direct and indirect results, and the achieved impact in the market. There are method and measurement problems associated with these figures, which means that they are associated with uncertainty. We have been careful to include indirect results, and thus believe the impacts reported are conservative (low) estimates.

Energy impact of Enova's work

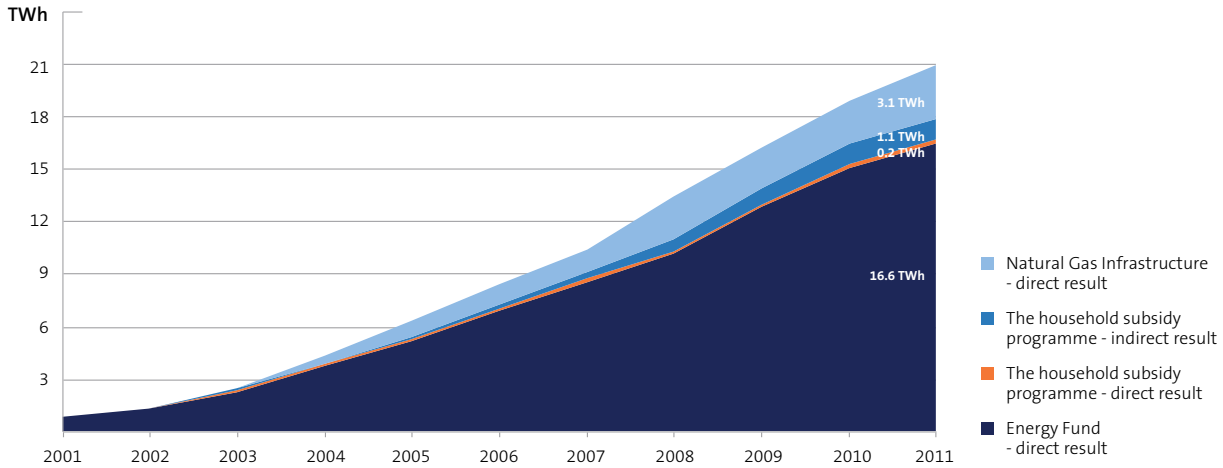
The quantities we report are the sum of direct and indirect results, as well as the observable impact realised in the market.

In major projects such as a district heating plant or wind power plant, we can achieve significant direct results from the specific project. In other areas, we use State funding and advising to reap indirect results, for instance by stimulating the demand for future-oriented energy solutions. By subsidising more than 16,000 air-to-air heat pumps in 2003, we believe we thereby triggered additional sales of heat pumps in the following years. The subsidies were followed up by broad-based advising.

Reporting indirect results requires a longer time horizon, because we need to observe the impact in the market to quantify indirect results. We have prioritised quantifying indirect results for heat pumps and have not yet measured the indirect results for the Energy Fund's programmes. Therefore only direct results from the tasks within the Energy Fund are included here for now. We expect that there are indirect results from these programmes, but have not quantified these.

By the end of 2011, we could report 16.6 TWh in direct results from management of the Energy Fund. In addition, we have achieved 1.4 TWh in indirect and direct results from the household subsidy programme, as well as 3.1 TWh in direct results from supporting the development of infrastructure for natural gas. When we add up direct and indirect results, we have a total energy result of 21 TWh, see Figure 4.1.

FIGURE 4.1 TOTAL ENERGY RESULTS FROM ENOVA'S WORK



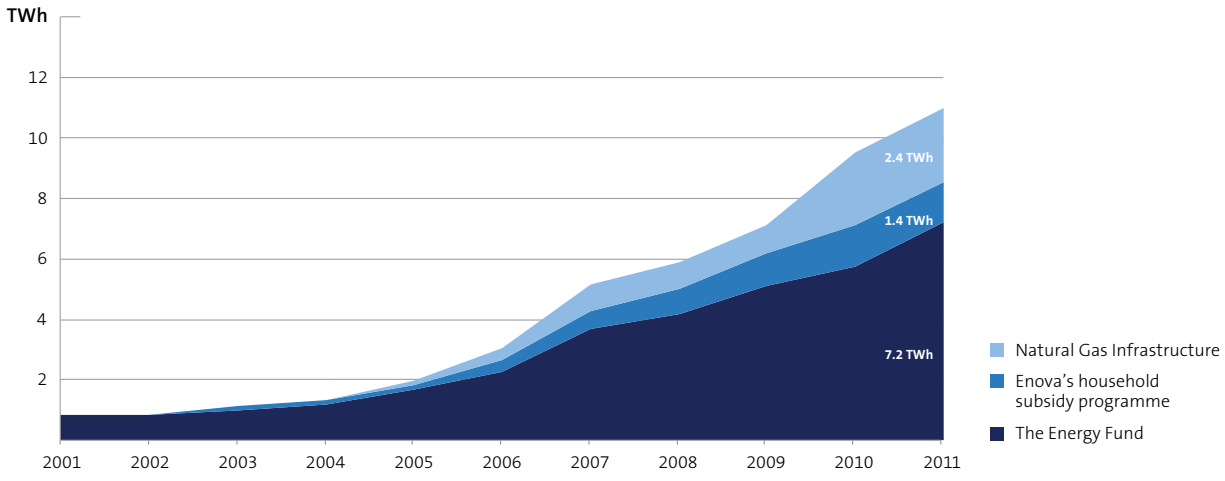
The figure shows the sum of energy results from Enova's work. The figure shows both the direct and indirect energy results that have been quantified for heat pumps within Enova Supports, Enova's household subsidy programme by the end of 2011.

When summing up the energy impact of Enova's work, we only include the changes implemented and that can thus be expected to have an impact in the market. We do not include contractual results from active projects that have not yet been completed.

By the end of 2011, we had final reports indicating 7.2 TWh in direct results from management of the Energy Fund. In addition, Enova's household subsidy programme accounts for 1.4 TWh that is implemented and has a market impact. Finally, most of the infrastructure projects for natural gas have been completed and the energy impact here is estimated at 2.4 TWh. The energy impact[1] of Enova's work totals 11.0 TWh, see Figure 4.2.

The majority of the results come from management of the Energy Fund, and these are addressed later in the report.

FIGURE 4.2 ENERGY IMPACT OF ENOVA'S WORK



The figure shows the energy impact of Enova's work. Impact from both direct and indirect energy results are included in the figure, so far they have been quantified up to the end of 2011.

1 The results from the Natural Gas Infratructure Programme are based on the capacity that has been installed, while the actual utilisation is in development and varies from year to year. Technical capacity is higher than the exploitable capacity we report.

Climate impact of Enova's work

The quantities we report are the sum of direct and indirect results, as well as the observable impact realised in the market.

Enova will contribute to reduce greenhouse gas emissions. For the climate, improving and promoting efficient use of energy is positive, since this enables us to reduce the use of fossil energy sources. In the same way, producing heat and power from renewable energy sources has a positive impact on the climate, since it can replace energy production from fossil energy sources that result in increased concentrations of greenhouse gases.

We are working on both of these angles. Some of the projects we support result in direct reductions of emissions by reducing the use of fossil fuels. Reduction in electricity end-use or production of renewable electricity has an indirect climate impact, as it allows electricity produced from non-renewable energy sources to be phased out.

The climate impacts are highlighted as an estimated reduction of annual oil consumption and estimated reduction in annual CO_2 emissions.

The impact of oil consumption will different for the various assignments and programmes within the Energy Fund. The Natural Gas Infrastructure Programme is assumed to substitute the use of oil with natural gas. Within the Energy Fund, the percentage of the energy result that results in oil reduction is highest from heating projects. The heating projects replace heating from oil, electricity and other types of energy. The customer generally has different alternatives for heating, so oil consumption varies from year to year. To calculate the oil reduction, it is estimated that about half of the energy result from the heating unit replaces oil. Projects within the industry and buildings market are directed both at heating and electricity-specific end-use. The overall reduction of oil consumption will constitute a small percentage of the results from these units. It has emerged that each kWh in energy result from the industry leads to an estimated reduction in oil consumption of between 30 and 40 per cent. Projects within the buildings market are considered to result in a proportionately smaller reduction in oil consumption of just over 10 per cent. Enova's household subsidy programme is assumed to reduce oil consumption at the same rate as the rest of the projects within the built environment.

Table 4.1 provides an estimate of reduction in annual oil consumption in Norway as a result of Enova's energy results. Our efforts from 2001 to 2011 are expected to reduce oil consumption by about 750,000 tonnes of oil when all

TABLE 4.1 REDUCTION IN ANNUAL OIL CONSUMPTION AS A RESULT OF ENOVA'S WORK

Reduction in annual oil consumption	2009	2010	2011	2001–2011
Total tonnes oil	tonnes	tonnes	tonnes	tonnes
The Energy Fund	81,605	88,784	40,185	458,617
Natural Gas Infrastructure	-	-	60,845	273,805
Enova's household subsidy programme	2,770	3,308	142	15,962
Total	**84,375**	**92,091**	**101,172**	**748,384**

The table shows the expected reduction in annual oil consumption based on energy results from Enova's work. Parts of this are expected future oil reductions.

TABLE 4.2 REDUCTION IN ANNUAL OIL CONSUMPTION, IMPACT FROM COMPLETED PROJECTS

Reduction in annual oil consumption	2001–2011
Total tonnes oil	tonnes
The Energy Fund	172,729
Natural Gas Infrastructure	212,959
Enova's household subsidy programme	15,962
Total	**401,650**

The table shows the reduction in annual oil consumption based on completed projects in the period from 2001-2011, distributed by different assignment activities.

TABLE 4.3 CLIMATE IMPACT MEASURED IN CO_2 REDUCTION FROM PROJECTS SUBSIDISED WITHIN THE ENERGY FUND

Million tonnes CO_2 per year	2011	2001–2011
Type of electricity:		
Coal power	1.0	11.7
European mix (NS-EN 15603:2008)	0.7	**8.3**
Gas power, conventional	0.5	5.7
Gas power with CCS	0.2	2.5

The table shows the reduction of annual CO_2 emissions as a result of the projects Enova has supported through the Energy Fund.

projects have been completed. In 2011, we supported projects that are expected to reduce oil consumption by about 100,000 tonnes in total. This is an increase in relation to the previous years and the increase is due to a major natural gas project in 2011. The Energy Fund has a decline, mostly due to less projects within the Industry unit that have an oil-related impact. In Table 4.2 we estimated a reduction in annual oil consumption in Norway based on completed projects. These are projects that are assumed to have an impact in the market. We then did not include contractual results from active projects that have not been completed and thus do not yet have an impact in the market. Our efforts in the period 2001 to 2011 are thus expected to correspond to an overall oil reduction of about 400,000 tonnes.

The climate impact of our activities and the projects we support are very dependent on the assumptions used as a basis for the alternative power production. The climate impact also varies according to which energy carriers are affected in the projects.

This is illustrated in Table 4.3 by the expected reduction in CO_2 emissions from projects supported through the Energy Fund in the period 2001-2011 varying from 2.5 to 11.7 million tonnes, depending on which alternative power production is used as a basis for the calculation. We then assume that the energy results from the Renewable Heating, Commercial Buildings, Public Buildings and Industry units in total lead to 40 per cent in reduced oil consumption and 60 per cent in reduced electricity use[2], while energy results from Renewable Power and New Technology are assumed to have a 100 per cent impact on electricity as energy carrier.

As regards the assignments outside the Energy Fund, we assume that Enova's household subsidy programme mainly has a climate impact through reduced use of electricity, but that just over 10 per cent of the energy results are expected to result in oil reduction. We assume that the natural gas infrastructure projects replace oil resulting in approximately 24 per cent less CO_2 emissions.

Assuming that the energy results from Enova's projects substitute electricity produced according to the European power mix, the overall reductions in CO_2 emissions is 9.3 million tonnes per year. Assuming that the energy results replace gas power, this corresponds to an overall reduction in CO_2 emissions of 6.4 million tonnes (Table 4.4). The Norwegian greenhouse gas emissions totalled 53.7 million tonnes CO_2 equivalents in 2010[3]. The reduction in

2 - The distribution of results between 40 per cent impact on oil consumption and 60 per cent impact on electricity use is based on the same distribution as in Table 4.1, but also takes into consideration that other non-renewable sources are used.

- The years indicate the year the project was granted support, and not the year of project completion. - In the calculations an emissions coefficient for gas power has been assumed equalling 367 kg CO_2/MWh. The source is "National climate measure analysis" (Civitas 2005). The emissions from gas power plants with carbon capture and storage (CCS) are assumed to be 15 per cent of the emissions from conventional gas power plants. The source is the US Department of Energy. For emissions from oil burning an average of 355 kg CO_2/MWh was used. The source is the Norwegian Petroleum Institute. Emissions from European mix of power production are assumed to equal 617 kg CO_2/MWh. We consider this representative for a European marginal mix. The source is Norsk Standard NS-EN 15603-2008.

TABLE 4.4 CLIMATE IMPACT FROM ENOVA'S WORK MEASURED IN REDUCED CO_2 EMISSIONS

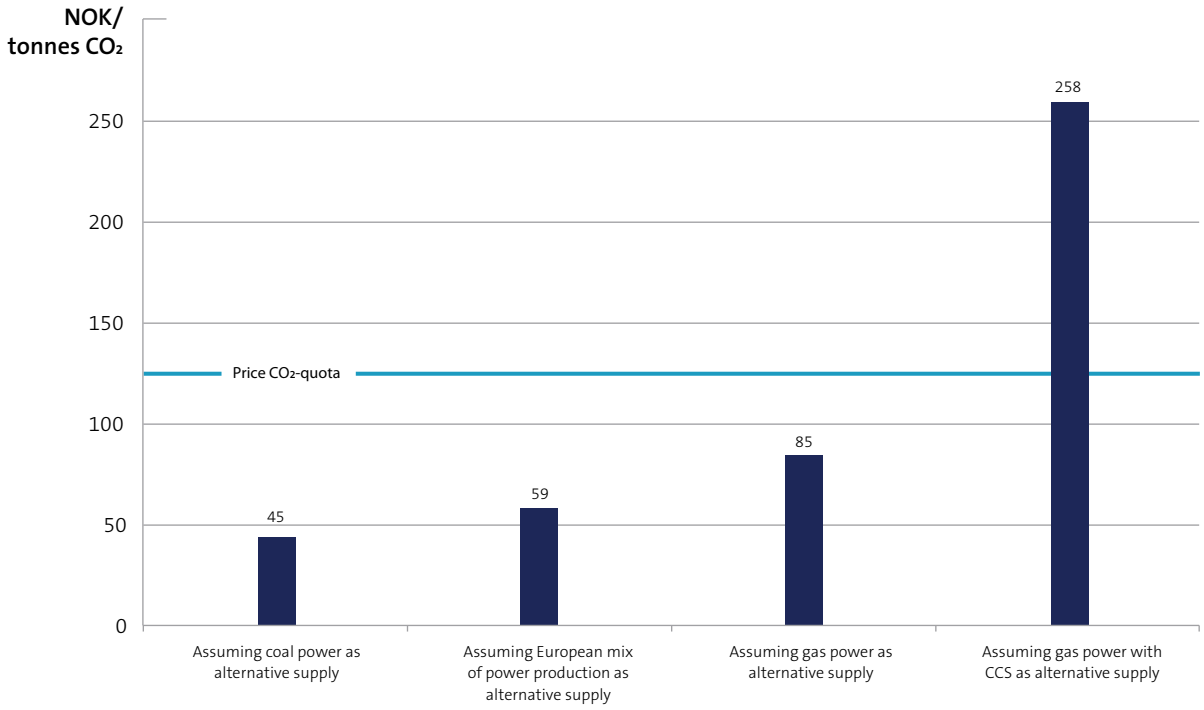
Million tonnes CO_2 per year	2001–2011	
	Reduced CO_2 emissions from direct and indirect energy results	Reduced CO_2 emissions based on energy impact
Type of electricity:		
Coal power	13.1	6.1
European mix (NS-EN 15603:2008)	**9.3**	4.3
Gas power, conventional	6.4	3.0
Gas power with CCS	2.8	1.3

The table shows the reduction of annual CO_2 emissions as a result of Enova's energy results, as well as the impact of measures that have already been implemented.

CO_2 emissions from our energy results is thus expected to constitute between 10 and 20 per cent of Norway's total emissions. Some of these CO_2 reductions are based on agreed commitments in the future. In Table 4.3 we show estimated reductions in CO_2 emissions from the measures that have already been implemented with an impact today.

Based on the average funding level in the different project portfolios and estimated reduction of CO_2 emissions, this is equal to a cost of measure of NOK 59 per tonne CO_2, if oneassumes that the alternative power production mix corresponds to a European mix. The costa of measure with other assumptions for alternative power mixes are shown in Figure 4.3. For comparison, the quota price in 2011 for CO_2 in the EU's climate quota market was an average of NOK 122 per tonne CO_2 for emissions in December 2014[4].

FIGURE 4.3 THE COST OF MEASURE FOR REDUCED CO_2 EMISSIONS



The figure shows the cost of measure for reduced CO_2 emissions from Enova's projects for the period 2001-2011.

3 Statistics Norway, greenhouse gas emissions, http://www.ssb.no/klimagassn/

4 Source: Reuters EcoWin, average price level of CO_2 quotas (Dec. 2014), traded on the InterContinentalExchange (ICE) in 2011.

Main goals for the Energy Fund

Three of the main goals focus on what we aim to achieve:
- More efficient use of energy
- Increased use of energy carriers other than electricity, natural gas and fuel oil for heating
- Increased production of energy from renewable energy sources

These three main goals cover the areas where it's natural to report on quantifiable energy results. The three main goals partially overlap and cannot be aggregated to a total sum. The energy result from the management of the Energy Fund for the period 2001 through 2011 constitutes a total of 16.6 TWh.

The other three main goals point to how Enova shall work:
- Introduction and development of new technologies and solutions in the energy market
- Well-functioning markets for efficient and environmentally friendly energy solutions
- Increased general knowledge in society regarding the possibilities for utilising efficient and environmentally friendly energy solutions

For these goals it is more appropriate to measure progress using other units than kWh in energy results to measure progress.

Main goal 1:

More efficient use of energy

Enova's programmes and activities within industry, buildings and residences shall stimulate the market to utilise more energy-efficient solutions and introduce new solutions in the market. For the entire period from 2001 through 2011 we have supported projects which will lead to total energy efficiency improvement equalling about 6.3 TWh. During 2011, we supported 335 projects for energy efficiency measures within the buildings sector and industry sector, with a total energy result of 652 GWh. To put this into context, the energy saved equals the total electricity production at the hydro power plant in Alta (in Finnmark County).

Main goal 2:

Increased use of energy carriers other than electricity, natural gas and oil for heating

The background for this main goal is both to increase the security of supply for electricity through reducing demand and increasing flexibility, and reducing the direct greenhouse gas emissions through converting from fossil energy sources. For the entire period 2001-2011, the projects we have supported for renewable heating and biofuel production constitute about 7.3 TWh. Of this, about 6.2 TWh are based on biofuel. In 2011, Enova supported 266 projects with renewable heating equalling 687 GWh. This is a wide spectrum of projects ranging from major district heating projects to energy conversion projects in the industry and small heating plants in buildings.

Main goal 3:

Increased production of energy from renewable energy sources

Ever since Enova was established, one of its main goals has been to increase production of renewable power and the access to central heating based on renewable energy sources. For the period from 2001 and through 2011, Enova has supported projects for production of nearly 10.3 TWh of energy from renewable energy sources. This includes more than 3.0 TWh of renewable power production.

Main goal 4:

Introduction and development of new technologies and solutions in the energy market

Introduction of new solutions is an important but demanding process. It is especially in the phase where the next step is taken from concept development and demonstration to meeting the first customers that the need for capital grows dramatically. Enova has a designated offer for demonstration of new technology and in 2011 we supported six demonstration projects. We have also carried out competitions where we challenge the market players to develop simpler and cheaper solutions for central heating systems. The introduction and development of new technology and efficient and environmentally friendly solutions within both energy production and energy efficiency are promoted through support and advising for demonstration of new technology and new solutions in buildings with exceptionally high energy performance,.

Main goal 5:

Well-functioning markets for efficient and environmentally friendly energy solutions

We will make efficient and environmentally friendly energy solutions the preferred solutions in the market. By supporting innovators and early users, we create market development by making the good solutions more competitive as a result of increased demand and reduced costs. Enova employs several instruments. Through the subsidy programmes, we increase demand for future-oriented energy solutions in the professional market. Through Enova Supports (Enova's household subsidy programme), we stimulate demand among private households. The market development for air-to-air heat pumps is a good example of this. Another instrument is familiarising consumers with the good solutions that are already on the market, for instance through the programme "Enova Recommends".

Main goal 6:

Increased general knowledge in society on the possibilities for utilising efficient and environmentally friendly energy solutions

Enova works systematically and in goal-oriented manner to achieve communication work that can impact attitudes and change behaviour for using efficient and environmentally friendly energy solutions. We will give advice, increase awareness regarding environmentally friendly energy solutions, point out possibilities and trigger measures. In this work, we target both households and the professional market within industry, buildings and production of environmentally-friendly heating and power. We offer professional advisory teams, give advice as part of the application processing and organise courses. Through the Rainmaker concept, we engage many children and young people. We have a nationwide information and advice service and serve both the professional market and the general public through telephone, email and social media.

Targets and results for the Energy Fund

By the end of 2011, there was a direct result of 16.6 TWh within the Energy Fund for the period 2001-2011. This result corresponds to the annual energy use of about 780,000 households, or more than 35 per cent of Norway's total of 2.2 million private households.

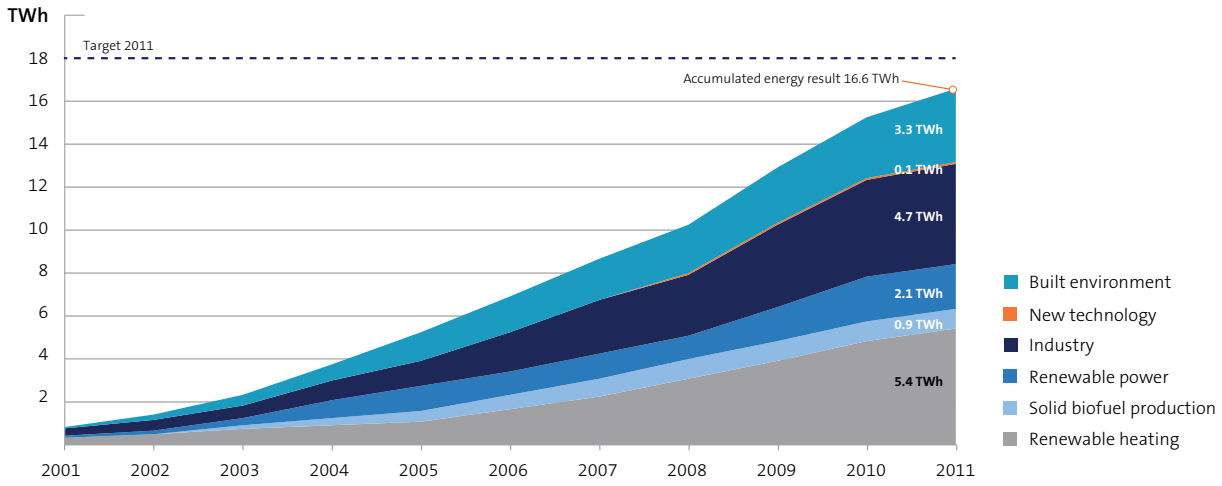
We work with long-term development and it takes many years from when a major energy project is granted investment support until it is completed and the actual results can be observed. When we decide to support a project, a contract is signed which stipulates an expected annual energy result from the project. 7.2 TWh of the total 16.6 TWh comes from completed projects. Results from these projects where final reports have been submitted thus constitute 44 per cent of the energy result for the Energy Fund. Just over half of our total result for 2011 consists of contractual results associated with ongoing projects.

The result target for the Energy Fund by the end of 2011 was 18 TWh. The target opened for including both direct and indirect results. Enova has limited reporting on results to direct results for the Energy Fund. Since the establishment of Enova we have had rising result targets and increasing ambitions. We have achieved these along the way, but the result target of 18 TWh ultimately proved to be too demanding.

Figure 4.4 shows the development in accumulated energy results since 2001, distributed by market areas. We see that the growth has decreased in 2011 and we ended up somewhat below the result target.

In 2011, contracts were entered into for new projects that yielded an overall energy result of 1,366 GWh. Of these, 23 GWh were cancelled in 2011 and the net energy result

FIGURE 4.4 ENERGY RESULTS AND ENERGY TARGETS FOR THE ENERGY FUND



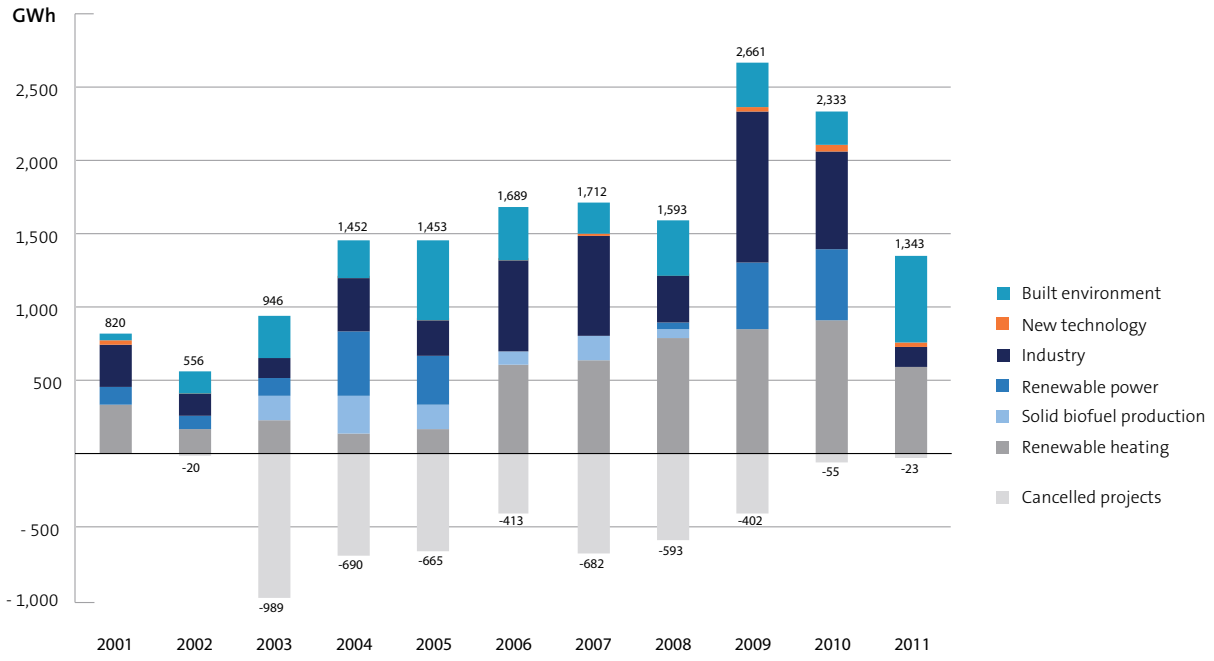
The figure shows accumulated energy results distributed by market area. The figures have been corrected to reflect changes in the energy result in projects where final reports have been submitted.

for signed contracts then became 1,343 GWh. To meet the result target of 18 TWh Enova needed to achieve a gross energy result in 2011 of 2.8 TWh. We have had results on this level in some previous years, but were unable to achieve this in 2011. We would like to point out five causes:

1) 2011 was characterised by uncertain and unsteady macro conditions internationally. Several European countries have very high debt, which has resulted in risk of international backlash and bank crisis. Due to great uncertainty and an unclear trend scenario, willingness to invest has been significantly reduced. Focus has been directed at cost reductions, capital flow and competitiveness.
2) The Norwegian energy market expects low electricity prices for a long time in the future. Available production capacity for electricity is expected to increase more than demand.
3) The climate involvement has decreased in recent years. There has been little progress in international negotiations on binding climate agreements. The price of CO_2 has been cut in half in 2011. Jobs and stimulating economic growth have been prioritised.
4) The project proposals we worked with in 2011 were more expensive and more difficult to trigger than in previous years. We will work actively to identify and deal with new barriers, to counteract the trend of increasing funding levels.
5) The fact that we no longer support wind power projects reduces the market scope compared to previous years.

Figure 4.5 shows the energy results for each year, as well as the market areas' percentage of the energy results. The figure also shows the scope of cancelled projects for each year of projects.

FIGURE 4.5 CONTRACTUAL ENERGY RESULTS FOR THE ENERGY FUND



The figure shows contractual energy results from contracts entered into in the period 2001-2011, divided by the year the contract was signed. The figure shows how cancellations of contracts impact annual net energy results. The columns show the total gross energy result for each year. Cancellations contribute to an accumulated deduction each year (corresponding to the negative part of the columns) from Enova's net energy result (corresponding to the positive part of the columns). The figures have been corrected for changes to the energy results in projects where final reports have been submitted.

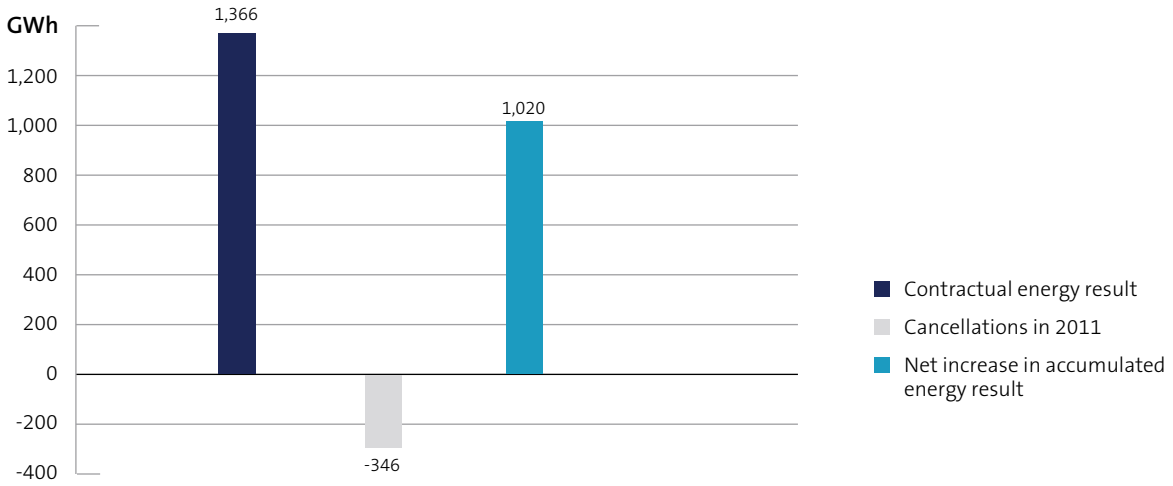
The Renewable Heating unit contributed the largest result in 2011, totalling 595 GWh. This result constitutes nearly half (44 per cent) of Enova's overall net energy result for 2011. Compared with last year, the unit's result was reduced by a third. The energy result is based on support for 220 projects, which is a 38 per cent increase compared with 2010. The supported projects are thus becoming smaller. District heating has now been established in the largest cities, so this development was expected at the beginning of the year – although not quite as dramatic: the average size of projects has been halved compared with 2010.

The Commercial Buildings and Public Buildings units delivered a total energy result of 530 GWh, doubling the result from last year. Both units have a considerable increase in energy results and have succeeded well in increasing the number of projects with energy results. The new investment support programmes that were launched in 2010 have thus been positively received in the market, well supplied by access to advising.

The Industry unit had an energy result of 130 GWh. This is the unit's lowest result since 2002, and constitutes an 80 per cent decline compared with the previous year. However, the unit still has a major increase in the number of supported projects, but the projects are smaller than previous years. Much of the increase is due to the new support programme for heating plants in industry, and the unit has launched pre-project support that does not yield direct energy results but is expected to trigger projects and results over time. Major investment decisions were postponed in 2011, and the companies have had a greater focus on minor improvements instead of major lifts. The unit has worked actively with several major project ideas. These major projects are not considered cancelled, but it takes longer to trigger them.

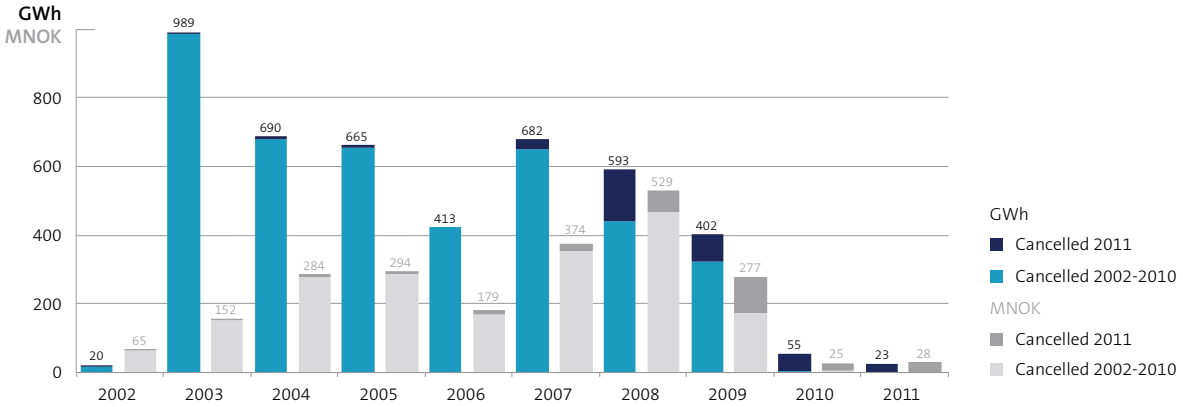
Enova has not supported new wind power projects in 2011, according to what we communicated to the market in 2010. The reason is the establishment of a joint electricity certificate market for Norway and Sweden starting in 2012. The Renewable Power unit therefore has no new energy results. The unit contributed 491 GWh in 2010.

FIGURE 4.6 **ENERGY RESULT 2011 (GROSS AND NET)**



The figure shows a comparison of gross contractual energy result in 2011, cancelled energy result in 2011, as well as resulting net expected energy result. The net expected energy result is synonymous with the net annual contribution to accumulated contractual energy result.

FIGURE 4.7 CANCELLED PROJECTS



The figure shows development in deducted energy results and associated returned funds connected to interrupted and cancelled projects distributed by year contract was signed. Cancellations reported in 2011 are highlighted.

This year the Residential Buildings unit reports direct energy results from investment support programmes and from Enova's household subsidy programme that was included in the Energy Fund in 2011. The unit's result is 62 GWh. In addition to this, The Residential Buildings unit has worked actively with method development for reporting indirect energy results from its work. The Residential Buildings unit has significant potential for lifting new and better solutions up to a mass market, which we expect will make the indirect results the most significant in coming years.

In 2011, previously signed contracts were cancelled totalling 346 GWh. In the same period 1,366 GWh was stipulated in new contracts, thus resulting in a net increase in the contractual result to 1,020 GWh in 2011 (see Figure 4.6).

The cancellation rate in 2011 is very low compared with active projects. The degree of cancellation (measured as cancelled energy result divided by contractual energy result from active projects) is only 3.9 per cent, compared with 7.3 per cent in 2010 – which was also low. A possible reason is that the unclear economic situation increases the companies' internal focus on the implementation of projects and consolidation, so few projects are cancelled. Cancelled projects are deducted from the energy result for the year the contract was originally entered into and reported. Figure 4.7 shows how the negative energy results as a consequence of cancelled contracts in 2011 are distributed as negative results retrospectively, added to the cancellations from previous years.

The figure shows a normal distribution of cancellations. The largest scope of new cancellations often comes three years after a contract is signed. Figure 4.7 also shows which associated subsidies are returned from the cancellations. Enova's subsidies for such projects are returned to the Energy Fund and recycled for new projects.

TABLE 4.5 ENERGY RESULTS DISTRIBUTED BY MARKET AREA AND YEAR

Market area	2001–2007	2008	2009	2010	2011	Total contractual	Contractual, corrected for final reported result
	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Renewable Heating	2,356	769	850	903	595	5,473	5,416
Solid biofuel production	831	60	-	-	-	891	906
Renewable Power	1,115	50	453	491	-	2,108	2,095
Industry	2,500	308	1,029	664	130	4,631	4,633
New Technology	76	3	32	47	27	186	145
Commercial Buildings	1,762	371	290	187	320	2,931	3,041
Public Buildings	-	-	-	41	210	251	251
Residential Buildings	10	-	-	-	62	72	72
Total contractual	8,651	1,562	2,654	2,333	1,343	16,543	-
Contractual, corrected for final reported result	8,630	1,593	2,661	2,333	1,343	-	**16,560**

The table shows the contractual energy result in GWh divided between market units and years, both before and after correction for final reported results in completed projects[5,6].

Table 4.5 shows contractual energy results and contractual energy results corrected for final reported energy results from completed projects. During 2011, final reports were submitted for projects with an energy result of 1,436 GWh. This increased the percentage of projects where final reports have been submitted from 37 to 44 by the end of 2011. Projects where final reports have been submitted now constitute a total of 7.2 TWh in energy result.

As we can see in Table 4.5, the contractual and final reported results do not differ much. Mainly this indicates that projects are carried out as planned, but if a project is changed considerably in the project period, the project will be re-assessed. In such instances the original project can be cancelled, and the revised project reapplies. Consequently, it is not certain that major project changes result in noncon-formities between the contractual and final reported result. However, this year's cancellation level is so low that most projects must have progressed as planned.

Figure 4.8 shows the percentage of projects where final reports have been submitted for previous years. We can see that the percentage of projects where final reports have been submitted increases with the projects' age. The figure is a good illustration of the long time perspective for Enova's investment support. In 2011, final reports had been submitted for a considerable percentage (approx. 20 per cent) of the projects that received investment support in 2005– and 15 per cent of the energy result from 2005 is still connected to ongoing projects.

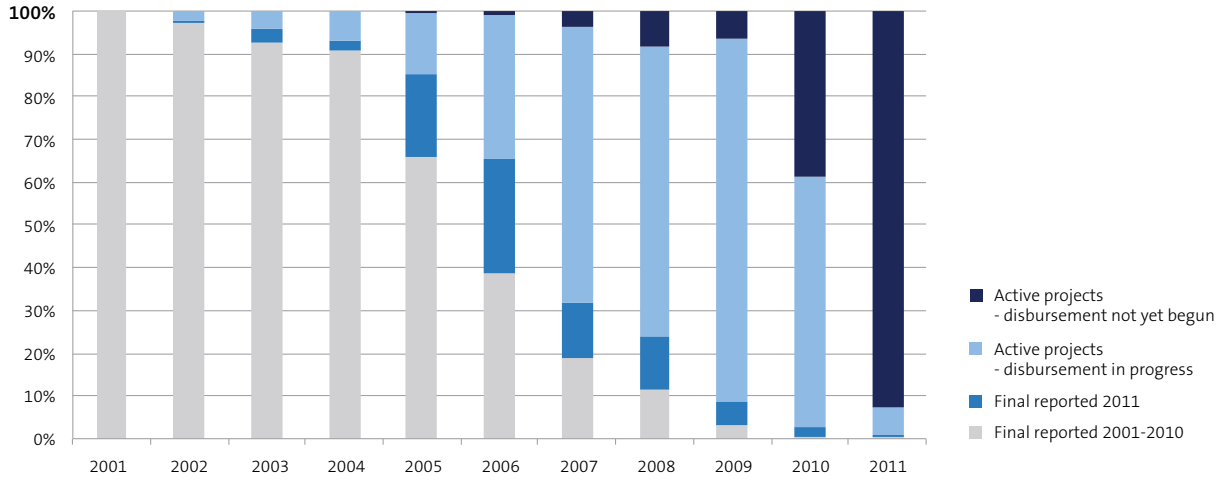
5 - The year refers to the year a contract is signed.

- Contractual results for each year will change from one year to the next due to cancelled/terminated projects and other changes. This means the figures in the table are not necessarily the same as were reported in Enova's 2010 annual report.

- The projects from 2001 were supported by NVE and have subsequently been followed up by Enova. Enova's agreement with the MPE stipulates that Enova can count the results from these projects, which have a total energy result of 820 GWh. These are distributed among the different units and tallied along with Enova's other energy results.

6 Results for Public Buildings before 2010 and Residential Buildings before 2011 are reported under Commercial Buildings. An exemption is the energy result from Residential Buildings in 2007, which is related to a campaign for energy-efficient windows, launched by Enova Recommends.

FIGURE 4.8 PERCENTAGE OF PROJECTS WHERE FINAL REPORTS HAVE BEEN SUBMITTED



The figure shows the percentage of final reported and active projects within the Energy Fund at the end of 2011, distributed by year the contract was signed (measured in GWh). In addition, the figure shows the percentage of the active projects where disbursement has begun.

The figure also shows the difference between active projects where disbursement has begun and active projects were disbursement has not yet started. The risk of a project being cancelled has appeared to be significantly lower once disbursement of support has started. It appears many of the projects that signed contracts for support in 2010 have still not received disbursement by the end of 2011, while the older part of the project portfolio nearly only consists of projects that have started. The percentage of active projects where disbursement has started is particularly high for 2009, when there was a special focus on quick start-up as a result of the Government's stimulus package. In total, active projects where disbursement has not started constitute about 15 per cent of the energy results. For projects that received support before 2011, a total of 92 per cent of the energy results has been final reported or is associated with initiated projects where disbursement has started.

We would like to note that cancellations also impact the percentage of projects where final reports have been submitted. Cancellations reduce the total in the relevant year, and thus the percentage of projects where final reports have been submitted will increase regardless of whether new projects have submitted final reports. For Enova, it is important to avoid unnecessarily tying up funds in projects with no progress. We have active follow-up in relation to progress and completion.

As we see there is a long time perspective from project application to completion of projects. The implemented solutions will then become operational, so energy results can be reaped. After three years of operation, Enova measures the actual energy results from the project. These results are reported in a separate sub-chapter in this year's report.

Management of the Energy Fund

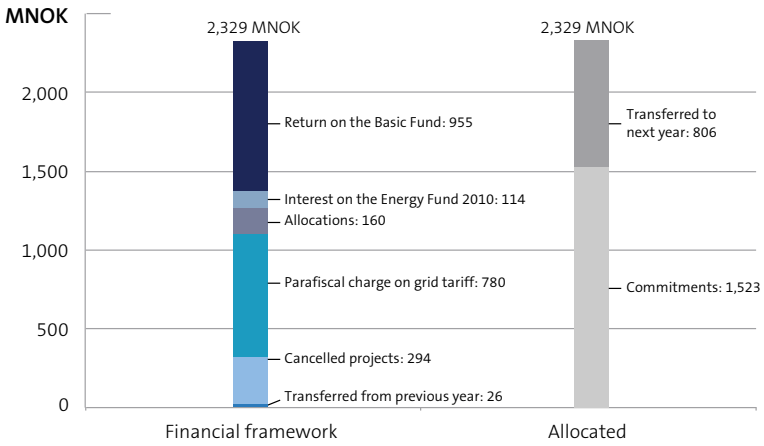
At the beginning of the year NOK 4.87 billion of the Energy Fund's resources were tied up in a portfolio of 1,643 active projects. There are a total of 4,485 projects in the portfolio when projects with final reports are included.

In 2011, Enova had NOK 2,329 million for disposition. This is NOK 237 million lower than in 2010, and NOK 1,427 million lower than in 2009 when we received an extraordinary transfer through the Government's stimulus package.

The return from the Basic Fund for renewable energy and energy efficiency became the largest income source for the Energy Fund for the first time in 2011. This return supplied funds totalling NOK 955 million to the Energy Fund in 2011. In previous years the parafiscal charge on the electricity distribution tariff has been the main income source. In 2011, the parafiscal charge constituted a contribution of NOK 780 million. Funds were also returned as a result of cancellations equalling NOK 294 million. Since we disburse support in arrears as a percentage of the incurred costs in the project, the support for cancelled projects is not disbursed, but is made available to new projects.

Enova transferred funds from 2011 to 2012 totalling NOK 806 million. This is the largest percentage of available framework that Enova has transferred to following years. We know that several major and ambitious projects with large investment frameworks were postponed in 2011, and we take advantage of the possibility the Energy Fund provides to transfer unallocated funds so we will be in a position to trigger these when the projects have been processed and the willingness to take risks in the market increases.

FIGURE 4.9 ALLOCATION OF THE ENERGY FUND'S RESOURCES



The figure shows the Energy Fund's different income sources and the allocation[7] of these.

7 Gross obligations in 2011 (including projects that are both approved and cancelled in 2011).

TABLE 4.6 ENERGY FUND'S ENERGY RESULTS AND ALLOCATIONS 2001-2011

	2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		Total	
	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK
Renewable Heating	-	-	173	49	233	31	141	71	168	64	603	288	634	275	784	401	855	668	903	524	595	537	5,088	2,908
Solid biofuel production	-	-	-	-	154	3	255	14	162	6	100	4	167	5	67	3	-	2	-	-	-	-	906	38
Renewable Power Production	-	-	80	35	127	27	441	186	334	137	-	-	-	-	50	93	453	1,067	491	978	-	-	1,975	2,523
Industry	-	-	157	20	136	16	359	56	249	35	610	119	691	169	310	67	1,029	499	664	298	130	63	4,333	1,342
New Technology	-	-	1	19	-	-	-	9	-	2	2	7	8	71	2	15	31	90	47	201	27	28	117	441
Commercial Buildings	-	-	146	56	297	65	256	68	541	116	375	101	202	72	381	136	293	501	187	127	320	323	2,997	1,567
Public Buildings	-	-	-	-	-	-	-	-	-	2	-	6	-	6	-	16	-	22	41	51	210	191	251	292
Residential Buildings	-	-	-	-	-	12	-	12	-	14	-	36	10	45	-	58	-	62	-	74	62	138	72	451
Analysis, development and strategy	-	-	-	7	-	7	-	6	-	6	-	8	-	13	-	9	-	9	-	18	-	36	-	118
International activities	-	-	-	7	-	7	-	7	-	12	-	12	-	6	-	5	-	9	-	8	-	7	-	79
Communications and Public affairs	-	-	-	113	-	40	-	26	-	47	-	19	-	21	-	45	-	26	-	25	-	60	-	422
Administration	-	-	-	42	-	36	-	41	-	45	-	47	-	61	-	75	-	100	-	93	-	95	-	635
NVE contracts (2001)	820	385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	820	385
Total	**820**	**385**	**556**	**349**	**946**	**244**	**1,452**	**495**	**1,453**	**487**	**1,689**	**647**	**1,712**	**742**	**1,593**	**922**	**2,661**	**3,055**	**2,333**	**2,399**	**1,343**	**1,478**	**16,560**	**11,202**

The table shows aggregated energy results and resources[8] from the Energy Fund from 2001[9] -2011, corrected for cancelled projects and projects with final reports as of 31 December 2011.

Table 4.6 shows the allocation of the resources in the Energy Fund and total energy results by the end of 2011 distributed by market unit and year. This table takes a basis in the year the funds were allocated. The values will consequently be changed retrospectively in the event of cancellations, and this results in transfer of funds between years. We have allocated about NOK 1.15 billion in support for energy projects in 2011. The total investments triggered in these projects equal about NOK 6.7 billion.

The percentage of support provided by Enova varies for the different market areas. In building, heating and industry projects, the support constitutes less than 20 per cent of the projects' total investments. In projects within New Technology the support constitutes between 25 and 50 per cent of the investments. Since the start, Enova has allocated about NOK 9 billion in support for projects that have triggered about NOK 45 billion in total investments.

8 Total funds allocated per unit.

9 Results transferred from the NVE (Norwegian Water Resources and Energy Directorate) contracts in 2001 are kept separate, as the funds allocated to these projects have not been divided between the respective market units.

TABLE 4.7 ACTIVITY OVERVIEW IN THE ENERGY FUND 2011 – APPLICABLE PROGRAMMES

	Number of applications received	Number of applications processed	Number of projects supported	Contractual energy result	Contractual support
	No.	No.	No.	GWh	MNOK
Renewable Heating	**275**	**273**	**221**	**595**	**531**
Biogas Production	10	10	5	153	143
District Heating - New Establishment	20	21	21	179	168
District Heating - Infrastructure	30	28	24	212	184
Small Heating Plants	116	123	88	43	32
Heating Plants - Simplified	99	91	83	7	4
Industry	**79**	**64**	**53**	**130**	**63**
Energy End-Use – Industry	40	31	28	111	46
Pre-project support for Energy End-Use Projects – Industry	16	13	10	-	8
Heating Plants - Industry	23	20	15	19	9
New Technology	**12**	**11**	**6**	**27**	**28**
Introduction of New Energy Technology	9	6	5	27	27
Innovative Energy Solutions	3	5	1	0,03	0,2
Commercial Buildings	**155**	**142**	**121**	**320**	**323**
Investment Support for Passive Houses and Low-Energy Buildings	47	43	35	46	115
Investment Support for Existing Buildings and Outdoor Facilities	83	74	63	274	207
Support for Passive House Feasability Studies	25	25	23	-	1
Public Buildings	**117**	**116**	**106**	**210**	**191**
Investment Support for Passive Houses and Low-Energy Buildings	17	19	19	6	20
Investment Support for Existing Buildings and Outdoor Facilities	41	42	37	204	166
Support for Passive House Feasability Studies	24	25	24	-	1
Pre-project Support – Improving Energy Efficiency and Conversion in Buildings and Outdoor Facilities	24	18	15	-	2
Pre-project Support – Heating and Infrastructure	11	12	11	-	2
Residential Buildings	**4,015**	**4,102**	**3,886**	**62**	**98**
Investment Support for Passive Houses and Low-Energy Buildings	50	42	39	3	24
Investment Support for Existing Buildings and Outdoor Facilities	16	12	10	8	6
Support for Passive House Feasability Studies	37	39	33	-	1
Enova Supports (Enova's household subsidy programme)	3,912	4,009	3,804	51	66
International activities	**23**	**23**	**17**	**-**	**7**
IEE II Pre-project Support	13	13	7	-	1
IEE II National Co-Funding	10	10	10	-	6
Total	**4,676**	**4,731**	**4,410**	**1,343**	**1,240**

The table shows an overview of the number of applications received, processed (i.e. submitted for final approval or rejection), percentage of projects approved for support, as well as funds[10] allocated within applicable programmes and associated energy results in 2011[11].

10 Only includes support within applicable programmes.

11 The number of projects funded under Enova's household subsidy programme are projects that were approved in the 2nd half of 2011. In addition, an obligation was transferred to the Energy Fund which applies to approx. 5,500 applications that were approved, but disbursement had not started as of 1 June.

The access to applications in 2011 was good as regards number. We processed 722 applications in 2011, and this is about 35 per cent more than in 2010 (applications for Enova Supports (Enova's household subsidy programme) are excluded from the comparison). This showcases good knowledge in the market. Part of the increase is due to new support programmes for heating plants, where we have both simplified and adapted the programmes to the market and improved the efficiency of the processing routines. Another reason for the increase is our efforts within advisory services and in supporting feasibility studies and pre-projects. We have our own advisory teams that organise courses which contribute quality expertise and good foundations for decisions, aiming to reduce the project risk for decision-makers in the market. We expect these activities to trigger new projects that in turn will yield energy results.

Of the processed applications in 2011, 84 per cent received funding commitments. This is a high level, in line with last year. The newest programmes most likely play a role here as well, for instance, the application procedures have been simplified so the applicants can see early on that a potential application will not be approved for support and thus do not apply. This results in an improved quality of the applications we do receive, which in turn results in a higher percentage of funding commitments. In the Industry and New Technology units, Enova works actively on acquiring and following up projects. This makes each application more work-intensive, but also results in high quality applications.

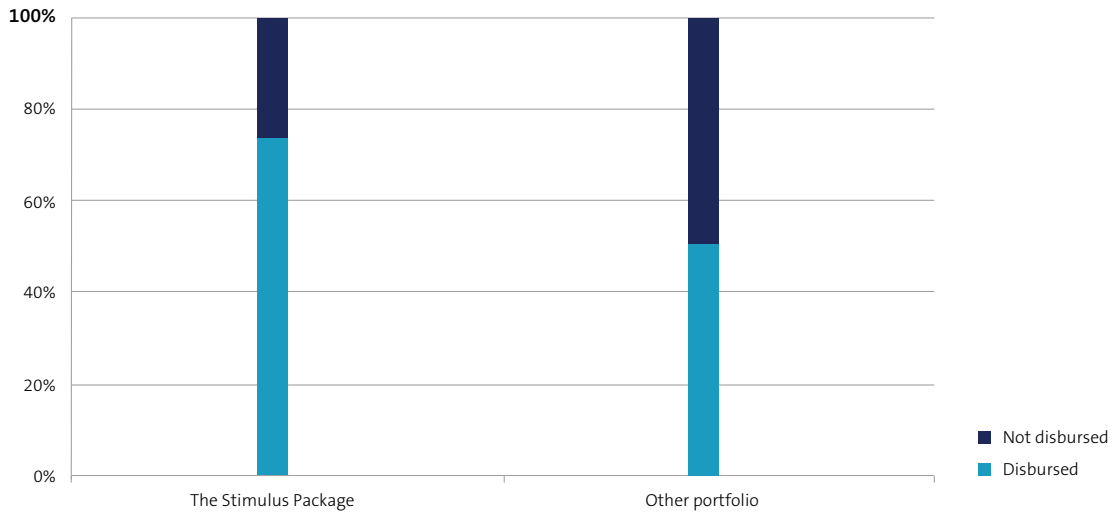
The 2009 Government Stimulus Package

In 2009, the Government's economic stimulus package (hereinafter referred to as the Stimulus Package) was implemented to stimulate financial activity and prevent the economic crisis. As a part of the package, the Government carried out an extraordinary transfer to the Energy Fund totalling NOK 1,190 million. The allocation of the stimulus package funds is described in detail in the 2009 annual report. By the end of 2011, NOK 787 million of the NOK 1,063 million that was allocated had been disbursed (adjusted for cancellations).

If we compare the Stimulus Package with the rest of the project portfolio from 2009, we can find the following main characteristics:

- *Considerably higher funding level (The funding level is 1.48 NOK/kWh in the Stimulus Package compared with 0.89 NOK/kWh in the rest of the portfolio).*
- *Quicker implementation (74 per cent of the project support in the Stimulus Package has been disbursed, compared with 53 per cent in the rest of the portfolio).*
- *Quicker completion (A final report has been submitted for 41 per cent of the project support in the Stimulus Package, compared with 6 per cent in the rest of the portfolio).*

FIGURE 4.10 PROGRESS OF PROJECTS IN STIMULUS PACKAGE VERSUS OTHER PROJECT PORTFOLIO FOR 2009



The figure shows the percentage disbursed in projects in the Stimulus Package compared with the rest of the project portfolio from 2009.

Funding levels within the Energy Fund

Enova's support for projects measured as NOK/kWh varies over time and between the different market areas, partly due to that we are responsible for market development and offering programmes within all sectors, and because the programmes change in nature and target groups over time.

A comparison of the funding level per contractual kWh over time within the same market area provides information on the development in funding level necessary to trigger a given annual capacity of energy production or energy efficiency measures. The support from Enova is assumed to trigger implementation of projects, without overcompensating.

There was a low level of cancellations in 2011. The volume of new projects in relation to previous years, however, shows that we are not overcompensating. There is no reason to doubt that the support has a triggering effect, as is documented by the project owners and assessed by Enova through the projects' application processing period and a criterion for granting the projects support.

The projects within the different market areas can have very different properties. For instance, one important property is for how long the projects will deliver their annual energy results. The calculated funding level does not reflect how efficient the distribution of funds between the market areas is, if the lifetime is not taken into consideration.

By correcting for the projects' lifetimes, we standardise the energy result, so the costs between projects within different market areas become comparable. In Table 4.8 we see that the average funding level in 2011 for lifetime-adjusted energy result was 0.056 NOK/kWh. This is 10 per cent higher than in 2010, and the general trend is rising. A reason for this is that we have utilised a wider range of instruments in relation to energy efficiency. Examples of this include pre-project support for building projects and support for energy management in the industry. We believe this will yield better results, but that it takes longer before the impact can be proven.

TABLE 4.8 FUNDING LEVELS WITHIN THE ENERGY FUND

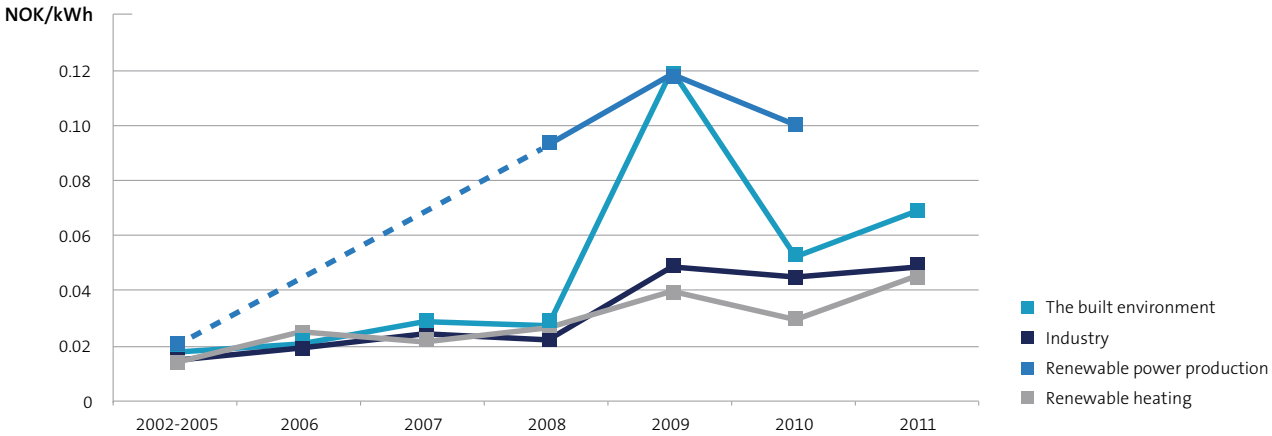
		2002–2005		2006		2007		2008		2009		2010		2011		2002–2011	
		Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual resultt	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted	Divided by contractual annual result	Life-time-adjusted
	Lifetime	NOK/kWh		NOK/kWh		NOK/kWh		NOK/kWh		NOK/kWh		NOK/kWh		NOK/kWh		NOK/kWh	
Renewable power production	**20 years**	0.39	**0.019**	-	**-**	-	**-**	1.85	**0.093**	2.36	**0.118**	1.99	**0.100**	-	**-**	1.27	**0.063**
Renewable heating	**20 years**	0.27	**0.014**	0.49	**0.025**	0.42	**0.021**	0.52	**0.026**	0.79	**0.039**	0.58	**0.029**	0.90	**0.045**	0.57	**0.028**
Industry	**10 years**	0.14	**0.014**	0.19	**0.019**	0.24	**0.024**	0.22	**0.022**	0.48	**0.048**	0.45	**0.045**	0.48	**0.048**	0.31	**0.031**
The built environment	**15 years**	0.26	**0.018**	0.30	**0.020**	0.43	**0.029**	0.41	**0.027**	1.80	**0.120**	0.78	**0.052**	1.03	**0.069**	0.61	**0.041**
Total	**Weighted average**	**0.27**	**0.016**	**0.33**	**0.021**	**0.34**	**0.024**	**0.48**	**0.028**	**1.05**	**0.065**	**0.87**	**0.051**	**0.92**	**0.056**	**0.60**	**0.037**

The table shows the funding levels – both divided by contractual annual result[12] and by the accumulated energy result throughout the estimated lifetime[13]. The results have been corrected for cancelled projects.

12 The year refers to the year a project enters into a contract and does not necessarily say when the results of the projects in the form of kWh will be realised. From and including 2006, relevant costs associated with training are included in each area. This could entail that the cost level from and including 2006 has become higher.

13 The lifetimes are estimates of the average lifetime for the projects in Enova's portfolio. The lifetime-adjusted support amount per kWh is calculated by the total support for one area being divided over the contractual energy result multiplied by the lifetime. The average support amount is weighted according to the energy result per market area. The effect of the support on the projects' cash flow will depend, e.g. on discounting factor, and this is not taken into consideration here.

FIGURE 4.11 DEVELOPMENT IN THE FUNDING LEVELS, LIFETIME TAKEN INTO ACCOUNT



The figure shows the development in funding levels measured over the lifetime in NOK/kWh for projects within renewable power production, renewable heating, industry and the built environment[14].

Figure 4.11 shows that when taking the project lifetime into account, the projects within renewable heating and industry need the least support with less than 0.05 NOK/kWh lifetime-adjusted. Building projects on the other hand have the highest support level with about 0.07 NOK/kWh lifetime-adjusted.

With the introduction of a joint electricity certificate market with Sweden, we have concluded our support programme for wind power,.

Both the calculated support per contractual kWh and the support per kWh over the projects' lifetimes take a basis in the individual project. In order to provide a correct assessment of the cost efficiency between the market areas the overall impact of the programmes over time must be assessed. This includes both direct and indirect impacts of the programmes. We work methodically to assess the overall impact of our programmes and activities.

It is emphasized that neither the funding level measured against the contractual energy result nor the energy result over the lifetime can be directly compared with a supposed funding level in, for instance, a certificate market. This is in part due to the fact that the support recipients' assessments of the value of support in the future versus support today (discounting) are not taken into consideration in the calculation.

14 Project support was not granted for wind power projects in 2006 and 2011. Supported projects in 2007 have since been cancelled. We thus have no supported projects within renewable power production from these years.

Achieved energy results

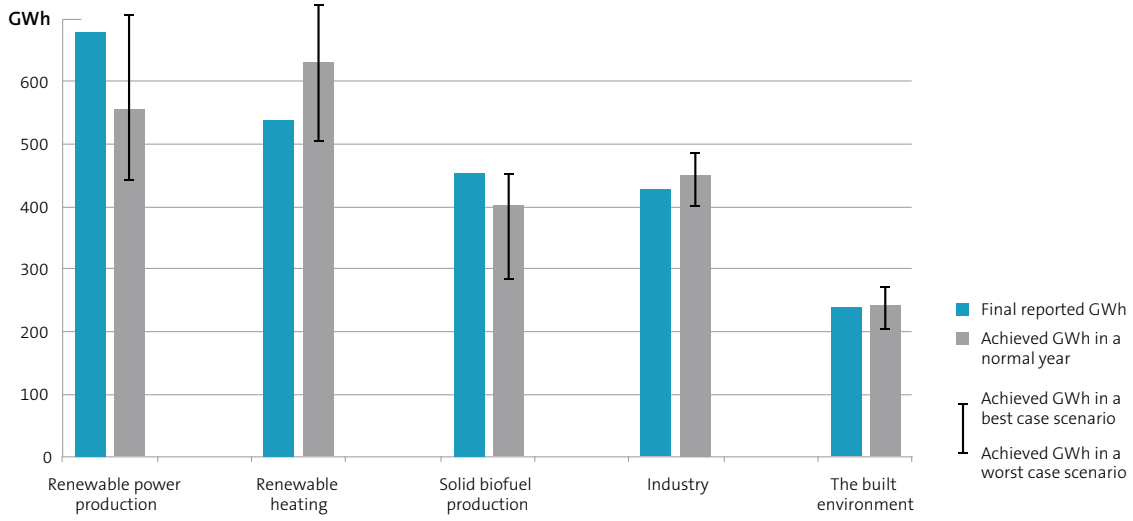
When Enova grants support for a project, the support recipient commits to achieving a certain energy result in the future. There is a long time perspective from project application to reaping results after the project implementation. It takes several years to implement the largest projects Enova supports. The results (in the form of energy saved or renewable production) then vary from year to year.

Enova has now been active for ten years, and the oldest projects have therefore gained enough operational experience to be able to report the achieved results. Enova has examined the results from projects that were implemented in the period from 2001 to 2008. Enova granted support to over 1,100 projects during this period. Of these projects, 344 were completed within the period, making closer examination relevant. Among the 344, we have quantified energy results for 157 projects based on individual reporting. These projects constitute 70 per cent of the overall energy result from the population.

Main results

- In a normal year these projects are expected to achieve in total a three per cent lower energy result than what they indicated in final reports.
- The achieved results from the majority (about two-thirds) of the projects are in line with what the projects originally intended, or more.
- Wind projects and projects within solid biofuel production in particular achieve lower results than indicated in final reports. We believe the quality of the projects and applications have improved since we first started supporting these types of projects, and we expect a positive development in achieved results from newer wind power projects. Enova has discontinued the Wind Power Programme and the Solid Biofuel Production Programme.
- Within the other market areas the contractual and final reported energy results have been fulfilled.
- The projects expect, in total, that results may fluctuate +/- 20 per cent from year to year.

FIGURE 4.12 ACHIEVED ENERGY RESULTS IN A NORMAL YEAR COMPARED WITH FINAL REPORTED RESULTS PER MARKET AREA



The figure shows final reported and achieved energy results for measured projects from different market areas within the Energy Fund. An uncertainty interval based on expected project fluctuations is shown in the columns for achieved results.

Figure 4.12 shows the final reported energy result per market area as dark columns, and achieved energy result in a normal year as grey columns. The expected interval for variation in energy results from year to year is indicated with lines in the grey columns. Each project has reported which annual energy result they expect in a best and worst case scenario, and the intervals were derived from these. The areas are sorted by lowest final reported energy result.

We see that wind projects constitute the largest share of the energy results, and these projects are unable to deliver the energy results they expected. The normal year production is almost 20 per cent lower than the production estimates that were used as a basis when completing the projects. In very good years with favourable wind conditions and no problems with technical operation, it will be possible to produce the expected energy volume, but projections have generally been overestimated. These projects also have the greatest uncertainty from year to year compared with the other areas. Experiences from these early wind power projects have contributed to better data and models regarding wind conditions and the optimal positioning of turbines, and have provided valuable knowledge on operational issues. New wind power projects appear to deliver more in line with expectations.

The projects from Renewable Heating achieve about 15 per cent higher energy results than expected when the projects are completed. There can be significant fluctuations from year to year here too, but the energy result expected at completion is usually exceeded – in best case by as much as 35 per cent more than expected. A large percentage of the results come from development of district heating, and when district heating has actually been developed in an area there are often more customers that report interest than what was originally assumed by the owner of the district heating system. District heating may be an attractive option once the infrastructure has been established.

The projects within solid biofuel production are unable to deliver the results they had intended and the projects report high risk of under-delivering. For some of the solid biofuel types, it has taken longer for demand to start than what the project owners expected, this applies to the demand for pellets for instance.

The Industry projects generally achieve higher energy results than what was expected when the project was completed. This group of projects has also reported the least uncertainty from year to year. These projects include improving efficiency of existing production capacity. They are not very dependent on climatic temperature fluctuations and have proven to be predictable.

We see that the Building projects achieve the energy results expected upon completion, and furthermore, relatively small fluctuations from year to year are expected.

Assessment of the population

The population consists of 344 projects that were reported as completed by 2008 at the latest. Of these, 45 projects have not reported, and 142 projects are considered unsuitable for follow-up so long after the project was completed. The main cause of this is that the project organisation no longer exists, and the project has not established a contact point that can give us a realistic report on behalf of projects initiated by market player collaborations, projects based on building portfolios or similar. This does not mean that the energy results are lost. A type of projects that is, for instance, considered unsuitable for standardised follow-up reporting today is business networks in the industry. A special evaluation of these projects proved considerable over-fulfilment of the energy results (Østfoldforskning 2005).

Population:
- Supported projects that were reported as completed by 2008 at the latest
- Number of projects: 344
- Number of projects able to report: 195

Response rate:
- 77 per cent able to report
- 57 per cent of total population

Following the reporting, we compared projects that reported on their own with projects where we actively requested and obtained reporting. There are no significant differences between these groups, nor has the process uncovered qualitative reasons that indicate there are differences between these groups. This indicates that the projects that have reported are representative for the population. We assume that projects that have not reported on average actually have the same relative energy result as the quantified projects within the same market area. Taking a conservative basis, we use the final reported values as a basis for the remaining group of projects, but for projects within biofuel production and wind we adjust the energy results down with the average achieved energy result as a percentage of the final reported.

TABLE 4.9 ACHIEVED RESULTS FOR THE POPULATION

	Reported	Unanswered	Cancelled	Total
Number of projects	157	45	142	344
Support amount (MNOK)	433	29	124	586
Contractual result (GWh)	2,355	158	802	3,315
Final reported result (GWh)	2,347	178	821	3,347
Achieved result (GWh)	2,286	184	790	3,260

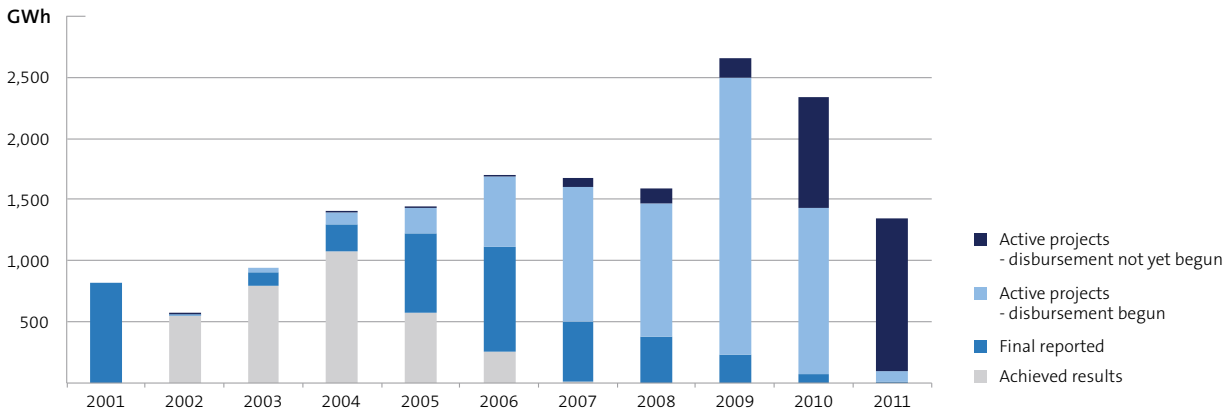
The table shows the number of projects, support amounts and energy results for the projects that were relevant for measurement of achieved results in 2011.

Estimated achieved energy results for the population are summarised in Table 4.9.

Figure 4.13 shows how the energy results are distributed by the projects' state – from completed projects where we measured achieved results to projects still in the start-up phase.

Enova will further develop the measurement method for reporting the best possible estimates of achieved energy results for the population as a whole.

FIGURE 4.13 CONTRACTUAL, FINAL REPORTED AND ACHIEVED ENERGY RESULTS



The figure shows net contractual, final reported and achieved energy result distributed by year the contract was signed. In addition, it shows how much of the contractual results come from active projects where disbursement has begun. The figures have been corrected for changes to the energy result in projects with final reports and implemented projects[15].

15 The projects from 2001 were supported by NVE. We have no data regarding achieved results from these projects.

Results and activities by market area

Enova is in charge of a wide range of programmes for households, industry, public owners and administrators. Our market units cooperate closely with the market players through financing, advising and communication activities. The market units manage a wide range of programmes, adapted to the different market segments. Some programmes enter into contracts for energy results, while other programmes support planning and assessment work. The Fund resources will also finance nationwide information and advisory services that will build up and facilitate achieving the goals for the Fund in a short and long term perspective. Most work areas in Enova depend on market measures to achieve energy results. These are activities such as information and advertising through targeted campaigns in the media, sales meetings, seminars, guideline material and customer follow-up through telephone and the internet. The Fund resources are also used actively to promote the innovation chain through demonstration and introduction of technology for efficient energy solutions and environmentally friendly energy production. These will support the goals for energy restructuring in the long term.

To assess and highlight results and the response from activities that do not have direct energy results, we establish and report activity goals within the New Technology and Residential Buildings units, as well as within the Communications and Public Relations department.

The Renewable Heating unit

Energy results

TABLE 4.10 CONTRACTUAL ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE RENEWABLE HEATING UNIT

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
Year	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	328	328	-	-
2002	166	173	49	49
2003	240	233	31	31
2004	207	141	71	65
2005	180	168	64	56
2006	586	603	288	260
2007	650	634	275	193
2008	769	784	401	256
2009	850	855	668	301
2010	903	903	524	106
2011	595	595	537	5
Total	**5,473**	**5,416**	**2,908**	**1,322**

TABLE 4.11 RESULTS AND FUNDS BY PROGRAMME LEVEL WITHIN THE RENEWABLE HEATING UNIT[16]

	Heating		Biogas Production		District Heating - New Establishment		Small Heating Plants		Heating Plants - Simplified		District Heating - Infrastructure		Conversion		Total	
Year	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK	GWh	MNOK
2002	173	49	-	-	-	-	-	-	-	-	-	-	-	-	173	49
2003	233	31	-	-	-	-	-	-	-	-	-	-	-	-	233	31
2004	141	71	-	-	-	-	-	-	-	-	-	-	-	-	141	71
2005	168	64	-	-	-	-	-	-	-	-	-	-	-	-	168	64
2006	603	288	-	-	-	-	-	-	-	-	-	-	-	-	603	288
2007	634	275	-	-	-	-	-	-	-	-	-	-	-	-	634	275
2008	-	-	-	-	534	259	44	22	-	-	206	120	-	-	784	401
2009	-	2	25	15	346	248	57	55	-	-	404	244	24	105	855	668
2010	-	-	163	95	552	298	59	45	-	-	129	86	-	-	903	524
2011	-	-	153	143	179	172	43	32	7	4	212	185	-	-	595	537
Total	**1,952**	**780**	**341**	**253**	**1,611**	**977**	**203**	**154**	**7**	**4**	**951**	**636**	**24**	**105**	**5,088**	**2,908**

TABLE 4.12 ENERGY RESULTS WITHIN DISTRICT HEATING AND TOTAL DEVELOPED DISTRICT HEATING CAPACITY[17]

	Energy result (delivered renewable heating)	Total installed capacity
Year	GWh	GWh
2002	151	188
2003	188	189
2004	113	129
2005	170	299
2006	505	669
2007	342	397
2008	739	836
2009	750	955
2010	681	793
2011	391	539
Total	**4,030**	**4,992**

16 - The table does not include NVE projects from 2001.

- The energy result is corrected for final reported kWh.

- The energy result from the programme *Heating Plants - Industry* and from the installation of small heating plants in building projects is included in the results for the Industry unit and the three units within the built environment respectively, and is not included in this table.

17 Under the agreement with the MPE for management of the resources from the Energy Fund, both the total developed district heating capacity and the delivered renewable heating shall be reported for district heating projects. In our energy result we only report the renewable heating delivered. However, we do not have the figures for total capacity for some older projects. For these projects, the total energy has been set equal to the renewable energy result.

TABLE 4.13 ENERGY RESULTS AND FUNDS ALLOCATED TO SOLID BIOFUEL PRODUCTION

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	-	-	-	-
2002	-	-	-	-
2003	151	154	3	3
2004	255	255	14	14
2005	162	162	6	6
2006	100	100	4	4
2007	163	167	5	5
2008	60	67	3	3
2009	-	-	2	2
2010	-	-	-	-
2011	-	-	-	-
Total	**891**	**906**	**38**	**37**

The Renewable Power Production unit

Energy results

TABLE 4.14 ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE RENEWABLE POWER PRODUCTION UNIT TO WIND POWER[18]

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	120	120	-	-
2002	80	80	35	35
2003	124	127	27	27
2004	454	441	186	186
2005	337	334	137	137
2006	-	-	-	-
2007	-	-	-	-
2008	50	50	93	80
2009	453	453	1,067	671
2010	491	491	978	213
2011	-	-	-	-
Total	**2,108**	**2,095**	**2,523**	**1,349**

18 No project support was allocated to wind power projects in 2006 and 2011. Allocation in 2007 has since been cancelled. We thus have no supported projects within the Renewable Power Production unit in these years.

The Industry unit

Energy results

TABLE 4.15 ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE INDUSTRY UNIT

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	300	300	-	-
2002	177	157	20	20
2003	104	136	16	16
2004	343	359	56	54
2005	258	249	35	33
2006	622	610	119	91
2007	697	691	169	89
2008	308	310	67	26
2009	1,029	1,029	499	152
2010	664	664	298	28
2011	130	130	63	2
Total	**4,631**	**4,633**	**1,342**	**509**

The New Technology unit

Energy results

TABELL 4.16 ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE NEW TECHNOLOGY UNIT

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	28	28	-	-
2002	1	1	19	19
2003	-	-	-	-
2004	35	-	9	8
2005	1	-	2	2
2006	7	2	7	7
2007	5	8	71	71
2008	3	2	15	11
2009	32	31	90	40
2010	47	47	201	15
2011	27	27	28	-
Total	**186**	**145**	**441**	**174**

Activity goals

The New Technology unit had one main activity goal for 2011 connected to implementation of the programmes. Goal achievement and comments on nonconformities are reported in the table below.

In 2011, a quantified goal for knowledge development, advising and information is not reported, measured in the number of events, as it was last year, since this is no longer considered a relevant goal in and of itself. However, these

are still activities which we define as important sub-activities, to contribute to communicate the possibilities that introduction of new technology represents. Planned activities carried out in 2011 are:

- *Active information* and knowledge spread through joint meeting arenas. In cooperation with Innovation Norway and the Research Council of Norway, Enova organised a series of meetings in five cities in Norway where the range of instruments was presented. The meetings were successful and the response from participants to being able to meet the governmental bodies within state funding to energy projects jointly was very positive.

- *Knowledge communication.* A potential study on geothermal energy was carried out, and the results from this work will be presented in 2012.

TABLE 4.17 ACTIVITY GOALS AND GOAL ACHIEVEMENT WITHIN THE NEW TECHNOLOGY UNIT

		2010		2011		
Activity	Performance indicator	Activity goal	Result	Activity goal	Result	Comment
Programme implementation	Number of new projects	10	5	10	6	The uncertainty in the financial markets continued to influence the willingness to invest in 2011. Potential applicants therefore hesitated on initiating challenging projects.

The Commercial Buildings unit

Energy results

TABLE 4.18 ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE COMMERCIAL BUILDINGS UNIT[19]

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	44	44	-	-
2002	138	146	56	56
2003	256	297	65	64
2004	246	256	68	63
2005	532	541	116	103
2006	352	375	101	83
2007	195	202	72	52
2008	371	381	136	75
2009	290	293	501	410
2010	187	187	127	26
2011	320	320	323	5
Total	**2,931**	**3,041**	**1,567**	**936**

Activities

Enova's Advisory Team for Passive Houses is a service provided for market players within the market area of Public Buildings, Commercial Buildings and Residential Buildings. However, it is not relevant or possible to separate the activities that have taken place between these market units. Reporting on activities within the Advisory Team in this year's annual report has been gathered under the Public Buildings unit.

19 The previous Built Environment unit was divided into the two units Commercial Buildings and Public Buildings in 2010. The results for all projects within the built environment up until 2009 are reported under the Commercial Buildings unit.

The Public Buildings unit

Energy results

TABLE 4.19 ENERGY RESULTS AND FUNDS ALLOCATED WITHIN THE PUBLIC BUILDINGS UNIT[20]

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	-	-	-	-
2002	-	-	-	-
2003	-	-	-	-
2004	-	-	-	-
2005	-	-	2	2
2006	-	-	6	5
2007	-	-	6	5
2008	-	-	16	13
2009	-	-	22	16
2010	41	41	51	13
2011	210	210	191	2
Total	**251**	**251**	**292**	**56**

Activities

Enova's Advisory Team for Passive Houses is directed at stakeholders within all of the three; Public Buildings, Commercial Buildings and Residential Buildings. However, it is not relevant or possible to separate the activities that have taken place between these market units. Reporting on all activities within the Advisory Team has been gathered under the Public Buildings unit in this year's annual report.

Enova's Advisory Team for Passive Houses was established to increase knowledge and expertise regarding passive houses. This will create greater certainty when choosing to build new or renovate according to a passive house standard. The service is made up of four parts and deals with:

- Introductory advising
- Project-specific advising
- Start course in planning passive houses
- Architecture competitions

The introductory advising service is directed at builders with the ambition of building a passive house. The project must be at an early phase and there are no size limitations in relation to the project. The activity has increased somewhat here from 2010 to 2011. Mostly residential projects use the Advisory Team, followed by the public sector.

The fact that market players within commercial buildings have the fewest projects in introductory advising could indicate that players feel they already possess the expertise themselves, or they obtain it by other means. The project-specific advising is offered for projects in the detailed engineering or construction phases. The activity is increasing here, with a more even distribution between the Residential Buildings, Public Buildings and Commercial Buildings unit.

Start-up courses in planning passive houses are directed at design engineers and building owners. The purpose of the course is to provide insight into what a passive house is, and lay the foundation for design engineers to be able to plan and design passive houses. After a year of high activity and interest, the activity declined in 2011, and a total of five courses were held in different cities. The reason for declining interest could be that the innovators in the market have taken the course, and the remainder of the market is still somewhat apprehensive. The course is evaluated continuously and has received very good evaluation results.

Assistance for architecture competitions can most likely be marketed better to increase activity. The assistance service deals with quality assurance of requirement specification and evaluation of energy concepts. The assistance does not entail participation in a jury.

20 - The Public Buildings unit was established in Enova in 2010. Results within the entire building sector up to and including 2009 are reported under the Commercial Buildings unit.

- Funds allocated for feasibility studies and pre-project support within the former work area Municipality (which was ended in 2010) are reported under the Public Buildings unit.

TABLE 4.20 ACTIVITIES WITHIN ENOVA'S ADVISORY TEAM[21]

		2010	2011			
Activity	Performance indicator	Total	Total	Activity level Commercial Buildings	Activity level Public Buildings	Activity level Residential Buildings
Project-specific advising	Number of projects	24	33	10	9	14
Introductory advising	Number of projects	50	65	7	22	36
Start-up course in planning passive houses	Number of courses	13 (930 attendees)	5 (249 attendees)	-	-	-
Advice in architecture competitions	Number of competitions	2	1	-	-	-

The Residential Buildings unit

Energy results

TABLE 4.21 ENERGY RESULTS AND FUNDS ALLOCATED TO THE RESIDENTIAL BUILDINGS UNIT[22]

	Contractual energy result	Contractual energy result, corrected for final reported	Allocated	Disbursed
	GWh	GWh	MNOK	MNOK
Transferred from NVE (2001)	-	-	-	-
2002	-	-	-	-
2003	-	-	12	12
2004	-	-	12	12
2005	-	-	14	14
2006	-	-	36	36
2007	10	10	45	45
2008	-	-	58	56
2009	-	-	62	60
2010	-	-	74	67
2011	62	62	138	44
Total	**72**	**72**	**451**	**345**

21 The Advisory Team is offered by the Public Buildings unit, the Commercial Buildings unit and the Residential Buildings unit, and is reported jointly under the Public Buildings unit.

22 Results for the Residential Buildings unit before 2011 are reported under the Commercial Buildings unit, with the exemption of an energy result in 2007, which is related to a campaign for energy-efficient windows, launched by Enova Recommends.

Activities

Beyond financial instruments through its support programmes, Enova also manages a wide range of information and advisory services. Many of these are placed under the Residential Buildings unit. The services consist of various campaigns, a nationwide answer service, available information and advice online and presence at various fairs. In addition, the unit is responsible for attitude-shaping activities vis-à-vis children and young people. Enova's Advisory Team for Passive Houses is directed at market players for Public Buildings, Commercial Buildings and Residential Buildings. However, it is not relevant or possible to separate the activities that have taken place between these market units. Reporting on activities within the advisory service in this year's annual report has been gathered under the Public Buildings unit.

In 2011, Enova continued Enova Supports, the household subsidy programme. This programme is an important instrument for developing markets for renewable heating solutions and energy efficiency. Since 2006, funds for the household subsidy programme have been provided through the fiscal budget. In connection with the Revised national budget, the programme received an additional NOK 70 million at the same time as it was determined that the programme is to be included under the Energy Fund, effective from 1 July 2011.

TABLE 4.22 ACTIVITIES WITHIN THE RESIDENTIAL BUILDINGS UNIT

	2004	2005	2006	2007	2008	2009	2010	2011	Comments
Visitors at trade fairs	250,000	250,000	160,000	50,000	170,374	150,080	100,516	119,583	Activity level depends on which fairs we choose to participate in. Significantly less activity in 2011. The trade show *Bygg Reis Deg* has a particularly positive impact on the number of visitors.
Page views per day, enova.no/hjemme	n/a	n/a	n/a	1,260	2,489	2,425	2,642	2,103	Campaigns in the media and web resulted in increased activity. Low electricity prices and little focus on energy resulted in somewhat lower activity in the 4th quarter.
Campaigns	4	4	2	2	2	4	4	5	*A Little Less. Each Day!* (Enova and Statnett's national electricity saving campaign), the *Norway's Coldest House* campaign, Enova Supports (Enova's household subsidy programme),the *Housing Coldoperative(*Brrretslaget) campaign (in cooperation with the Norwegian State Housing Bank and NBBL) and search word optimisation.
Number of schoolchildren at the Rainmakers' Day	4,000 Oslo	4,000 Trondheim	4,500 Bergen	3,500 Kristiansand	5,500 Stavanger	6,000 Fredrikstad	5,700 Hamar	4,900 Tromsø	Every year an upper limit is set to the number of schools that can participate at the Rainmakers' Day, due to safety and cost reasons. The percentage of participation is considered very high, and also the share of schools qualifying as Rainmaker schools out of the total number of participating schools has increased.
Viewers per broadcast of the Energy Challenge	340,000 - 560,000	270,000 - 330,000	263,000 - 413,300	329,000 - 492,000	279,000 - 472,000	343,000 - 528,000	156,000 - 259,000	125,000 - 170,000	The Energy Challenge was moved from NRK1 to NRK Super from and including 2010, which resulted in a decline in viewers. However, the ratings from NRK Super viewed in isolation are good.
Number of applications received under Enova Supports, the household subsidy programme	n/a	n/a	15,238	5,956	8,684	7,960	9,209	7,866	Lower activity than planned for in the 4th quarter, most likely due to a combination of financial uncertainty and low electricity prices.
No. of subsidies disbursed under Enova Supports, household subsidy programme	n/a	n/a	-	4,692	3,317	3,637	3,168	3,421	

Activity goals

The tables show activity goals and results in 2010-2011 for a selection of activities within the Residential Buildings unit. Deviations from 2011 goals are discussed in the table.

TABLE 4.23 ACTIVITY GOALS AND GOAL ACHIEVEMENT WITHIN THE RESIDENTIAL BUILDINGS UNIT[23]

		2010		2011		
Activity	**Measurement parameter**	**Activity goal**	**Result**	**Activity goal**	**Result**	**Comments**
Ask Enova +47 800 49 003	Number of inquiries	35,000	41,231	35,000	44,939	Record-high activity. Campaigns in the media and internet resulted in increased traffic. Low electricity prices and little focus on energy resulted in somewhat lower activity in the 4th quarter.
Enova stand at building trade fairs	Number of visitors	200,000	100,516	126,000	119,583	Activity level depends on which fairs we choose to participate in. Significantly less activity in 2011. The trade show *Bygg Reis* Deg has a particularly positive impact on the number of visitors.
Enova At Home	Number of page views	800,000	964,262	800,000	767,683	A search word optimisation was carried out, which will give more precise access to information on the webpages.
Enova Recommends	Number of page views	300,000	479,292	415,000	560,920	Significant interest in advice on insulation and replacement of windows due to high electricity prices and a long period of cold. *The Norway's Coldest House* campaign resulted in significant activity.
Enova Rainmakers	Number of page views	600,000	536,746	725,000	427,738	Activity goals were very ambitious. TV campaign during Spring did not have the desired impact.
Total number of contact points		**1,935,000**	**2,122,047**	**2,101,000**	**1,920,863**	
Enova Rainmakers – Rainmaker activities	Number of schools that have implemented and reported 1-5 of the Rainmaker activities.	100	120	150	136	Activity goal was increased after over-fulfilment of the goal in 2010. We did not reach the goal in 2011, but the result shows increasing activity from previous years.
Enova Rainmakers – Rainmaker schools	Number of schools that have implemented and reported *all* 5 official "Rainmaker activities" and qualify as *Rainmaker schools*	75	53	75	54	The number of Rainmaker schools is stable.
Enova Supports, Enova's household subsidy programme	Number of applications received	8,500	9,209	9,000	7,866	Lower activity than planned for in the 4th quarter, most likely due to a combination of financial uncertainty and low electricity prices.
Enova Supports, Enova's household subsidy programme	Number of subsidies disbursed	3,400	3,168	3,200	3,421	

23 The number of inquiries to Ask Enova refers here to the number of inquiries related to the Residential Buildings unit.

International activities

Activities

TABLE 4.24 APPLICATIONS APPROVED FOR PRE-PROJECT SUPPORT WITHIN INTELLIGENT ENERGY EUROPE (IEE)

Programme	Project name	Applicant	Allocated
			NOK
Integrated initiatives	Energy Saving in Municipal Buildings in small Communities in rural districts	Regional council in Sør-Østerdal	150,000
SAVE	Chain (energy) efficiency in small to medium enterprises - CHAMP	New Energy Performance AS - NEPAS	75,000
Integrated initiatives	Green Public Procurement leading to Sustainable Regions in Europe (GPP SURE)	Energiråd Innlandet AS	100,000
Integrated initiatives	Energy efficiency and renewable energy in buildings Nearly Zero - Energy Buildings	Omsorgsbygg Oslo KF	50,000
Integrated initiatives	Pre-project: Renovation of European Nursing Home Buildings to Nearly Zero-Energy Requirements	Oslo University College	150,000
Integrated initiatives	ZEBRA (Zero Energy Buildings areas with Renewable energy Applications)	Asplan Viak AS	100,000
SAVE	Preproject for development of ECOINFLOW - Energy Control by Information Flow	Norwegian Institute of Wood Technology	200,000

TABLE 4.25 APPLICATIONS GRANTED INTENTION FOR NATIONAL CO-FUNDING WITHIN INTELLIGENT ENERGY EUROPE (IEE)

Programme	Project name	Applicant	Allocated
			NOK
Integrated initiatives	Renovation of European Nursing Home Buildings to Nearly Zero Energy Requirements (Nurse-0)	Omsorgsbygg Oslo KF	1,149,000
Integrated initiatives	Renovation of European Nursing Home Buildings to Nearly Zero Energy Requirements (Nurse-0)	Oslo University College	920,000
SAVE	Green Public Procurement leading to Sustainable Regions in Europe (GPP SURE)	Gjøvik municipality	183,880
SAVE	Green Public Procurement leading to Sustainable Regions in Europe (GPP SURE)	Energiråd Innlandet AS	514,960
Integrated initiatives	Energy saving in municipal buildings in small communities in rural districts	Region council in Sør-Østerdal	600,000
SAVE	Sustainable Energy for Rural Communities - SUSTAINCO	Energigården - Senter for Bioenergi AS	800,000
SAVE	Energy Control by Information Flow	Norwegian Institute of Wood Technology	780,000
SAVE	Energy Control by Information Flow	Trelastindustriens Landsforening	111,150
SAVE	Chain energy efficiency in small and medium enterprises - CHAMPION	New Energy Performance AS – NEPAS	410,400
Integrated initiatives	Widespread market adoption of Integrated Energy Design	Asplan Viak AS	300,000

TABLE 4.26 IEA ACTIVITY WHERE ENOVA IS REPRESENTED AND/OR CONTRIBUTES WITH CO-FUNDING

IEA Implementing Agreements – ExCo representation through Enova	
Implementing Agreement (IA)	**IA Title**
End user technologies (EUWP)	
EUWP 04	Heat Pumping Technologies
EUWP 05	Demand Side Management
EUWP 09	Industrial Energy-Related Technologies and Systems (IETS)
Renewable energy (REWP)	
REWP 16	Renewable Energy Technology Deployment
REWP 17	Solar Heating and Cooling
Inter-sectorial topics (CS)	
CS 22	Energy Technology Data Exchange
Bioenergy	
CS 22	IEA Bioenergy
IEA Tasks/Annexes – representation through Enova	
Task/Annex	**Title**
IEA EEWP	IEA Energy Efficiency Working Party (EEWP)
IEA SHC 47	Solar Renovation of Non-Residential Buildings
IEA SHC Task 39	SUPOL - Sustainable Polymers for Solar Collector Applications Polymeric Materials for Solar Thermal Applications
IEA SHC Task 41	Solar Energy and Architecture
IEA Bioenergy Task 40	Sustainable International Bioenergy Trade - Securing supply and demand
IEA Wind - Task 29	Mexnext - Analysis of Wind tunnel measurements
IEA Heat Pump Programme (HPP) Annex 32	Economical Heating and Cooling systems for low energy houses
IEA Heat Pump Programme (HPP) Annex 34	Termisk drevne varmepumper for oppvarming og kjøling
IEA District Heating and Cooling - Annex IX	District Heating and Cooling incl. CHP
IEA DSM - Task 21	Standardisation of Energy Savings Calculations
IEA IETS - Annex X	Energy efficient drying and dewatering technologies
IEA IETS-Annex XII	Membranes as energy-efficient technologies for Separation of Hydrocarbons
IEA IETS-Annex XIII	Industrial Heat Pumps
IEA IETS-Annex XV	Industrial Excess Heat Recovery
Other IEA activity	
IEA Information centre AIVC	Norwegian participation in IEA's information centre AIVC – Air Infiltration & Ventilation Centre
Other international activities (other than IEA)	
Forum	**Title**
IEE II	Intelligent Energy Europe II
ECEEE	European Council for an Energy Effeicient Economy
EnR	European Energy Network
ISO (International Organization for Standardization)	Strategic Advisory Group on Energy Efficiency

Communications and Public Relations department

Enova's communications activities are anchored in our applicable enterprise strategy and are defined in a separate communications strategy for the period 2010-2013. The activities span a wide spectrum within the main fields marketing/profiling, press and media relations, internet, social media and public relations.

Goal for the strategy period: "A more distinctive and significant Enova".

The department plays a crucial role in relation to the company's credibility: Strengthen credibility and increase visibility. A more significant footprint in the public sphere, increased targeted and clear communication efforts, increase awareness of and knowledge about Enova. Furthermore, the department must support the market units with clear communication of existing and new solutions and programmes to contribute to increases in the number of applications.

Enova's reputation is determined by "what we do and how we do it". Therefore, work was carried out throughout 2011 on implementing our brand and identity platform, for instance, through the activity "Living the Enova brand".

Even though familiarity and knowledge show a rising trend, this still represents a barrier. Planning work has been carried out throughout the year through different communication activities to improve in these areas. Several ad campaigns have been carried out with the purpose of promoting new and existing programmes to increase the number of applications, and also increase familiarity and knowledge. Analyses show that reputation and trust in the market and society is being strengthened and the knowledge of Enova is increasing.

Attention regarding Enova in an editorial perspective is still high and we see that results from self-initiated efforts are increasing. We have developed and strengthened our dialogue with important organisations, enterprises and groups in society. The internet and our websites are our most important communications channel towards the market and society. The work with next generation's websites and a targeted presence in social media started in 2011 and will be completed in the 1st quarter of 2012. Our information helpline Ask Enova also experienced increased traffic in 2011 in relation to previous years, and is being further developed as an instrument.

Activities

TABLE 4.27 ACTIVITIES WITHIN THE COMMUNICATIONS AND PUBLIC RELATIONS DEPARTMENT[24]

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Articles about Enova	n/a	675	657	2,463	2,971	2,815	5,870	4,587	3,900
Campaigns	3	4	4	4	4	3	6	5	9
Ask Enova inquiries	55,500	35,000	22,000	33,000	26,635	28,578	38,460	48,681	50,458
Press releases	n/a	n/a	23	26	23	27	71	45	40

24 Number of inquiries to our information helpline Ask Enova counts the total number of inquiries including inquiries related to residential buildings.

Natural Gas Infrastructure

Energy results

TABLE 4.28 ENERGY RESULTS AND FUNDS ALLOCATED TO NATURAL GAS INFRASTRUCTURE (FINANCED OUTSIDE THE ENERGY FUND)

	Capacity	Contractual energy result	Allocated
Year	GWh	GWh	MNOK
2004	685	405	29
2005	680	545	24
2006	400	175	10
2007	90	90	6
2008	1,500	1,200	45
2009	-	-	-
2010	-	-	-
2011	2,250	690	39
Total	**3,364**	**2,423**	**106**

The table shows contractual energy results[25] and funds in the period 2004-2011 within the Natural Gas Infrastructure Programme, as well as capacity[26]. Funds for this programme are allocated via the fiscal budget and thus are not part of the Energy Fund.

25 Contractual energy results are the expected gas sales 5 years after becoming operational. The figures have been corrected for cancellations and changes to contracts.

26 Capacity is the facility's normal technical capacity.

Results within bioenergy

A well-functioning bioenergy market is an important precondition in order for renewable heating to become the preferred heating solution. It is therefore important for Enova to follow the development in the bioenergy market following the projects we have supported.

6.7 TWh bioenergy triggered through support from Enova

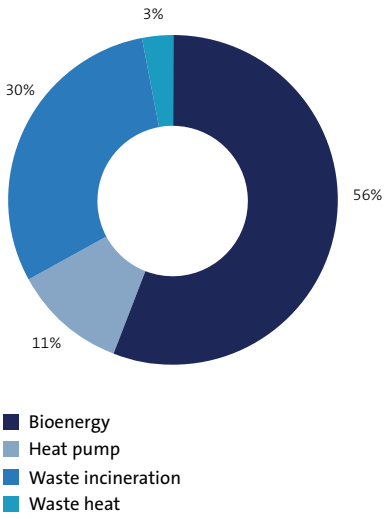
In the period 2001-2011, Enova has supported 6.7 TWh of renewable heatingbased on bio and production of different types of biofuel through its various support programmes. This is distributed between 5.5 TWh of bio-based heating and 1.2 TWh biofuel production. The delivered heating includes 1.8 TWh from waste incineration, which is considered bioenergy in official energy statistics. Figure 4.14 shows the contractual energy result from renewable energy delivered to the end user for the period 2001-2011 allocated by fuel. Biofuel such as chips, pellets and briquettes constitute 56 per cent of the energy results we have achieved within heat production based on renewable energy sources.

In addition to supporting renewable heating through programmes directed at district heating, small heating plants in buildings and industry, Enova has supported production of solid biofuel and biogas with 891 GWh and 341 GWh, respectively.

Enova develops markets for bioenergy from forest to radiator

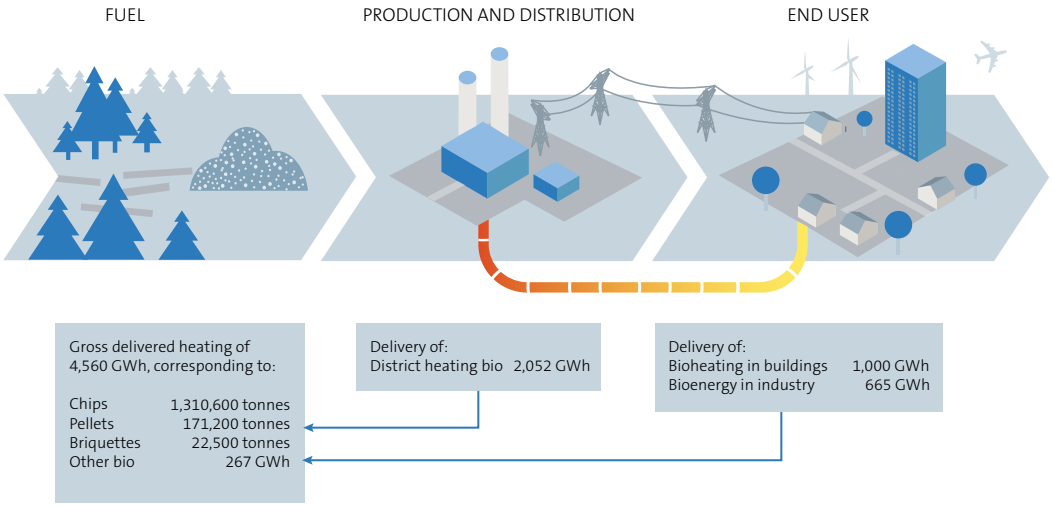
Enova's support is mainly channelled as near the end user as possible. Increased demand in end-use for renewable heating results in increased demand for bio-based fuel, and this contributes to develop the biofuel markets. This is shown in Figure 4.15, where a contractual bio-based heating delivery of more than 3.7 TWh (here waste energy is kept separate) will give an increased demand for biofuel delivered to plant of nearly 4.6 TWh when the efficiency in heating plants and loss in district heating infrastructure has been taken into consideration.

FIGURE 4.14 DELIVERED RENEWABLE HEATING[27], DISTRIBUTED BY ENERGY SOURCE



27 Includes 490 GWh of power production from projects with combined heat and power (CHP).

FIGURE 4.15 DELIVERED HEATING BASED ON BIOENERGY, RE-CALCULATED TO PRODUCED AMOUNT BIOFUEL



The figure illustrates how conversion to renewable heating based on bioenergy, either being delivered through a district heating system or produced locally with each end user, works upwards in the value chain (from right to left in the figure) by there being an increased market for sale of biofuel.

The contractual energy result with bioenergy as the energy source will result in an increased demand for chips of about 1.3 million tonnes chips, 171,200 tonnes pellets and 22,500 tonnes briquettes.

Specific measures in 2011

In addition to continuing the support service for heating production and distribution based on renewable energy sources such as chips and pellets, the following was carried out in 2011:

- In 2011, 153.3 GWh of biogas production was signed into contracts. The biogas production programme was established as thematic efforts over three years in 2009, and it was therefore evaluated externally in 2010. The evaluation concluded, for instance, that continuing the programme is considered relevant for further development of the biogas market. Enova has therefore decided to continue the biogas programme for a new three-year period.
- Potential studies for renewable heating point to a considerable potential within the small heating plants segment, i.e. heating of individual buildings and small areas with a joint heating supply. In 2011, a programme for small heating plants was re-launched. The support service was both expanded and made more specific than before, and the objective is to develop the market for small heating plants providing heat to single or smaller groups of buildings.
- With a significant heating demand in processes and the heating of buildings in the industry sector, energy conversion here is a particularly important area for developing local bioenergy markets. In 2011, a study was started which will map the possibilities for bioenergy in the industry and this study will be completed by spring 2012.
- Good statistics are a precondition for assessing the development of bioenergy markets. In cooperation with Nobio, Enova has reviewed available bioenergy statistics and pointed out possible improvements in the official statistics.

Projects supported in 2011

FIGURE 4.16 CONTRACTUAL ENERGY RESULT AND SUPPORT WITHIN THE ENERGY FUND – DIVIDED BY COUNTY

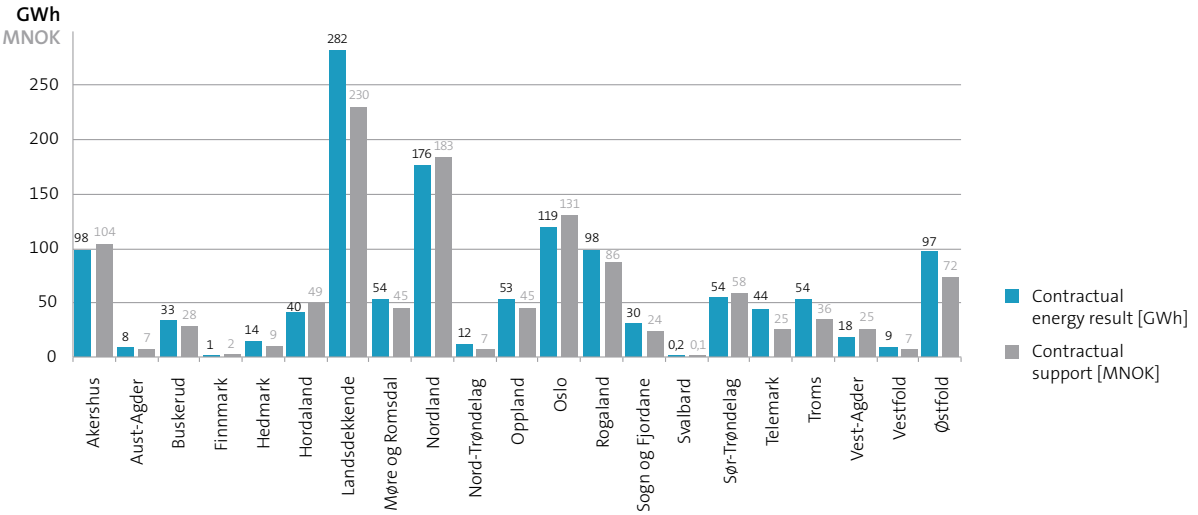


FIGURE 4.17 NUMBER OF PROJECTS SUPPORTED WITHIN THE ENERGY FUND – DIVIDED BY COUNTY

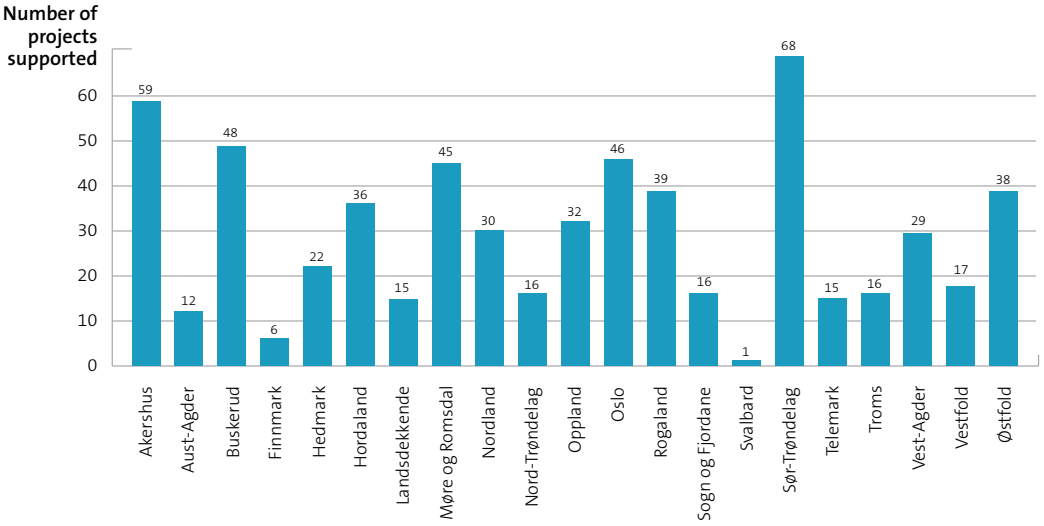


TABLE 4.29 TOP 10 IN 2011 –HIGHEST SUPPORT AMOUNT PER PROJECT

Market unit	Project description	Contractual energy result	Support allocated	Applicant
		GWh	MNOK	
Public Buildings	Energy efficiency in the Armed Forces' buildings	151	**128**	Norwegian Defence Estates Agency
Renewable Heating	District heating new establishment – Salten	89	**89**	Statkraft Varme AS
Renewable Heating	District heating development – Bodø	71	**77**	Bodø Energi AS
Commercial Buildings	EKING – Energy cuts in NorgesGruppen	66	**53**	NorgesGruppen ASA
Renewable Heating	Biogas plant Grødaland	58	**52**	Ivar IKS
Renewable Heating	Bio-based district heating – Campus UMB, Ås	42	**38**	Statkraft Varme AS
Commercial Buildings	Energy efficiency in AMFI Drift AS' shopping centres	40	**32**	Amfi Drift AS
Commercial Buildings	Energy efficiency measures in Telenor Eiendom	39	**31**	Telenor Eiendom Holding AS
Renewable Heating	Development of district heating grid – Jessheim	26	**31**	Hafslund Fjernvarme AS
Renewable Heating	New biogas plant at Borregaard factories	35	**30**	Borregaard Industries Limited

TABLE 4.30 TOP 10 IN 2011 –HIGHEST ENERGY RESULT PER PROJECT

Market unit	Project description	Contractual energy result	Support allocated	Applicant
		GWh	MNOK	
Public Buildings	Energy efficiency in the Armed Forces' buildings	**151**	128	Norwegian Defence Estates Agency
Renewable Heating	District heating new establishment – Salten	**89**	89	Statkraft Varme AS
Renewable Heating	District heating development – Bodø	**71**	77	Bodø Energi AS
Commercial Buildings	EKING – Energy cuts in NorgesGruppen	**66**	53	NorgesGruppen ASA
Renewable Heating	Biogas plant Grødaland	**58**	52	Ivar IKS
Renewable Heating	Bio-based district heating – Campus UMB, Ås	**42**	38	Statkraft Varme AS
Commercial Buildings	Energy efficiency in AMFI Drift AS' shopping centres	**40**	32	Amfi Drift AS
Commercial Buildings	Energy efficiency measures in Telenor Eiendom	**39**	31	Telenor Eiendom Holding AS
Renewable Heating	New biogas plant at Borregaard factories	**35**	30	Borregaard Industries Limited
Commercial Buildings	Green Operations in ICA	**30**	24	ICA Norge AS

Submitted viewpoints on hearings

Consultation submissions from Enova have been issued in the following areas in 2011:
NVE's proposal for changes in the Transmission System Regulations, the Energy Act Regulations and Regulations relating to Proofs of Origin for Electricity Production.

The MPE's request for comments for entering into an Implementing Agreement under the International Energy Agency (IEA) for participation in the "International Smart Grid Action Network (ISGAN)"

The MPE's proposed Regulations on Electricity Certificates

The MPE's request for viewpoints on the EU Commission's proposal for an Energy Efficiency Directive that will replace Directives 2004/8/EC and 2006/32/EC

NVE's proposed amendments to the Regulations relating to Energy Labelling and Energy Assessment of Technical Facilities

NVE's proposed amendments to the Regulations relating to Advanced Measurements and Management Systems (AMS) (Regulations dated 11 March 1999 No. 301, relating to measurement, settlement, etc.)

The MPE's proposed new Electricity Certificates Act

The MPE's proposed areas for further assessment of areas suitable for future development of offshore wind

Publications

Reports, assessments and other publications published by Enova in 2011:

Potential and Barrier Study – Energy Efficiency in Norwegian Buildings
Enova 2012

- Improving Energy Efficiency in Norwegian Residential Buildings
  Carried out by the Prognosis centre for Enova 2011
- Improving Energy Efficiency in Norwegian Non-Residential Buildings
  Carried out by Multiconsult for Enova 2011
- Passive Houses and Nearly Zero Energy Buildings
  Carried out by Rambøll for Enova 2011

Enova's Building Statistics 2009
Enova 2011

Enova's Building Statistics 2010
Enova 2011

Guidelines for people purchasing or building passive houses
Enova 2011

Sfære 1-2011 (online magazine)
Enova 2011

How Good Was It? Developing a Bottom-up Portfolio Impact Evaluation Scheme Getting Ex-post Project Assessments That Convey Uncertainty.
Poster presented at the International Energy Program Evaluation Conference, Boston, USA (peer review). (www.iepec.org)
Prepared by Per Ivar Helgesen, Enova 2011

Reliability of Air to Air Heat Pumps and their Contribution to Energy Savings in Norway.
Paper presented at the ECEEE Summer Study, Giens, France (peer review)
Prepared by Sverre Inge Heimdal, Enova 2011

Usability of data from commissioned tests for estimating trends and distribution of air tightness in the building stock.
Paper presented at the 9th Nordic Symposium on Building Physics, Tampere, Finland (peer review)
Prepared by Holøs S. Relander, T-O. Heimdal, S.I., Sintef/ Enova 2011

Enova's Industry Network and Results 2010
Enova 2011

Enova's Heating Report 2010
Enova 2011

Study on Energy Use in Buildings with District Heating
Performed by Norsk Energi for Enova 2011

Feasibility Study Biopower
Performed by Norsk Energi and KanEnergi for Enova 2011

Potential for Renewable Heating and Cooling in 2020 and 2030
Performed by Xrgia for Enova 2011

Expertise Compendium for Heating Plants
Performed by Enova, in cooperation with the Norwegian Technical Heating Association, Norwegian Association of Plumbing, Heating and Ventilation Contractors, Norwegian Bioenergy Association, Norwegian Heat Pump Association, Norwegian Solar Energy Association, Norwegian District Heating Association, Norwegian HVAC Energy and Technical Environment Association, Low Energy Programme, 2011

Programme Evaluation. Enova's Support for Biogas Production
Performed by Rambøll for Enova 2011

Returns and Solidity in Norwegian District Heating Industry
Performed by Pareto Securities for Enova 2011

Market Analysis – Small Heating Plants
Performed by ECgroup for Enova 2011

Analysis of Norwegian Bioenergy Statistics – Proposal for Improving Quality
Performed by Nobio for Enova 2011

Feasibility Study - Solar Energy in Norway
Performed by Sintef and KanEnergi for Enova 2011

Definitions and terminology

Achieved energy result
Measurement or estimate of achieved energy result after a measure has been implemented and you can observe an impact of the measure. Compared with contractual and final reported energy result, achieved energy result is based on observations, not expectations. The achieved energy result must be based on a review/audit of what energy results the projects have actually achieved. In practice, it can be difficult to quantify achieved results, and the challenges may differ for energy production and energy end-use. It also takes time from when the measures are implemented until achieved results can be reported.

Contractual energy result
Contractual energy result is the energy result a project is expected to achieve at the time of the contract. For support projects with energy results, this result is included as a part of the contractual basis between the support recipient and Enova.

Cost efficiency
One of the objectives when establishing Enova was to achieve a more cost-efficient effort in renewable energy and efficient energy end-use. Enova prioritises projects based on the size of the support need in relation to the energy result (NOK/kWh), given the project's lifetime and the goals stated in the agreement with the MPE. The projects applying for support from Enova are evaluated in three steps. First, the technical energy content of the project is assessed, followed by the financial aspects of the project and the need for support, and finally, Enova's cost connected to the project (support) is assessed against the energy result (kWh). Projects that do not deliver a high enough energy result in relation to the support amount, will not win in the competition for resources.

The Energy Fund
Support for promoting environmentally friendly restructuring of energy end-use and energy production in the form of increased production from renewable energy sources, increased access to heating energy and reduced energy use are financed through the State's Energy Fund. The Energy Fund is financed through i.a. the revenue generated by a parafiscal charge on the electricity grid tariff. Since 1 July 2004, this parafiscal charge has been 0.01 NOK/kWh and in 2011 this totalled NOK 780 million. In addition, from and including 2008, the Energy Fund has been supplemented with the returns from the Primary Capital Fund for renewable energy and energy efficiency. The Primary Capital Fund received NOK 10 billion in fund capital in the fiscal budget for 2007. Since then, the fund capital has increased through new awards over the fiscal budget and currently constitutes NOK 25 billion. The goals set for Enova assume that the Primary Capital Fund receives another NOK 5 billion in 2012. In 2011, the Energy Fund received the returns from the Primary Capital Fund totalling NOK 955 million. The Energy Fund also receives resources through allocations over the fiscal budget, interest income and funding commitment authorisations.

The Energy Fund is based on the Act relating to amendment of the Act dated 29 June 1990, No. 60 relating to the generation, conversion, transmission, trading, distribution and use of energy, etc. (Energy Act), Section 4-4, cf. Odelsting Proposition No. 35 (2000-2001) and Recommendation to the Odelsting No. 59 (2000-2001). The Ministry of Petroleum and Energy (MPE) carried out an evaluation of Enova SF and the Energy Fund in 2006, and this was presented to the Storting in the Storting White Paper No. 69 (2006-2007). This is included in the basis for the applicable agreement with the MPE for the period 1 June 2008 to 31 December 2011. The Ministry of Petroleum and Energy (MPE) determines the statutes for the Energy Fund.

Energy restructuring
The contract between the Ministry of Petroleum and Energy (MPE) and Enova, stipulates that the Energy Fund will be used to promote an environmentally friendly restructuring of energy end-use and energy production. The energy restructuring is a long-term effort in the development of the market for efficient and environmentally friendly energy solutions that contribute to strengthen the security of energy supply and reduce emissions of greenhouse gases.

Energy result
Enova manages the Energy Fund to achieve energy results through reduced use of energy or through increased production of renewable energy.

ESA
EFTA's monitoring organisation (EFTA Surveillance Authority) enforces the state support regulations in the EEA agreement. Government support granted to enterprises must as a rule be reported to the ESA.

Final reported energy result
All projects with energy results submit a final report upon the project's conclusion. The final reported energy result is an updated forecast of achieved results at the project's conclusion. Enova assesses whether the project's reported energy result is reasonable.

Indicator
An indicator is used to quantify something that is difficult to measure directly. In an energy efficiency context, intensities that relate energy use to a volume that drives the energy demand, for example kWh per m2, kWh per refrigerator per year, kWh per tonne steel produced, etc. are often used. Other types of indicators could be market shares for new energy-efficient solutions, the percentage renewable energy, etc.

Indirect energy result
While contractual energy result is a direct result of the support awarded by Enova, there will also be indirect results that are ripple effects of our instruments. Enova awards financial support for innovators and early users to develop the market for efficient and environmentally friendly energy solutions. Another instrument is familiarising consumers with the good solutions that already exist in the market. Examples of indirect results are energy saved due to widespread use of new energy solutions, or that further investments become profitable as a result of the initial investment supported by Enova.

Lifetime
A key issue related to new production of energy and reduced energy end-use is how long we will reap benefits from the results. Here one can differentiate between technical and financial lifetime. The technical lifetime is connected to how long the equipment can function with normal maintenance, while financial lifetime is related to how long it will take before it will be more profitable to replace the equipment with new and improved technology. Enova bases its lifetime consideration on financial lifetime. This is also reflected in Enova's investment analysis. In addition to the importance of project lifetime as a parameter in the assessment of the support need, it also expresses how long we will benefit from the energy result provided by the project. The project's lifetime multiplied by annual energy result (year*kWh) will express the project's total energy result over its lifetime. Similarly, the energy cost is also expressed over the lifetime (NOK/(year*kWh)).

Other renewable energy
For the purposes of this publication, other renewable energy means renewable energy that is not wind power or renewable heating.

Passive buildings
Passive buildings are buildings which require very little energy for heating. This is achieved by reducing heat loss from the building to a minimum. Passive buildings are well insulated, have minimal thermal bridges and air leakage and have good heat recovery from ventilation air. There are also requirements for energy-efficient equipment and the use of renewable energy to heat passive buildings. The term "passive building" was first introduced by the Passive Building Institute in Germany, which has a certification scheme for building products and buildings. Passive buildings have become widespread in Germany, Austria and gradually also in a number of other European countries. There is a Norwegian standard for passive buildings, adapted to Norwegian climatic conditions and building methods. A similar standard for commercial buildings is underway.

Programmes
Enova has chosen to organise its activities within programmes. A programme is an instrument directed towards one or more specific target groups, with set application deadlines and application criteria. This organisation has been chosen to focus the use of policy instruments.

Programme coordinator
Enova outsources some of the initial processing to free up internal capacity and ensure fast processing. The external processors are called Enova's programme coordinators.

Renewable energy
Enova uses the same definition of renewable energy used in the European Union's (EU's) Renewables Directive (2001/77/ EC). In the directive, renewable energy is defined as renewable, not fossil energy sources (wind, solar, geothermal energy, tidal energy, hydropower, biomass, gas from landfills, gas from treatment plants and biogases). Biomass is furthermore defined as biologically degradable fractions of products, waste and agricultural remnants (plant or animal-based), forestry and associated industries in addition to biologically degradable fractions from industrial and municipal waste.

Ripple effects
While contractual energy result is the direct impact of support provided by Enova, the ripple effects are the indirect impacts of the support. Ripple effects can fall into many different categories. Examples include more profitable investments as a consequence of the initial investment, market changes in the form of reduced costs, etc.

Triggering effect
As an administrator of public resources, it is important for Enova to ensure that the resources we manage are used in the best possible manner. This principle is stipulated in the agreement between Enova and the MPE in that support must contribute to realising projects that would not have been realized otherwise. Projects with a low cost per generated or reduced kWh will often be profitable by themselves, and therefore do not require support from the Energy Fund. Support is also considered to be triggering if it advances a project in time, or if a project has a larger scope than it otherwise would have had.

Enova is a government energy agency, owned by the Norwegian Ministry of Petroleum and Energy.

Enova will initiate and promote an environmentally friendly restructuring of energy end-use and energy production in Norway. Our goal is to create lasting changes in supply and demand for efficient and renewable energy solutions. We aim to inspire and make it easier to choose future-oriented energy solutions for both private and professional market players.

All of Enova's reports can be found at **www.enova.no**

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