STATEMENT

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1. Main economic developments [1]

1.1 Strengthening the forces for growth

The German economy demonstrated an unexpected level of dynamism. In 2010 gross domestic product (GDP) grew by 3.6 percent, the economy's strongest performance since reunification. This upswing - which followed the acute economic slump in 2008 and 2009 - was attributable primarily to the rebound in the global economy. Thanks to a high level of competitiveness, German companies were able to get back on track, ramping up the exports as the global economy revived. Since then, the initial economic stimulus from exports has now spread to the domestic economy, which is increasingly becoming the driving force behind Germany's economic expansion. In its annual projection for 2011, the Federal Government expects the upswing to continue, with GDP forecast to grow at a real rate of 2.3 percent. This means that the German economy is growing at a substantially faster pace than the Eurozone average. Nevertheless, in general the level of dynamism is likely to diminish somewhat compared to last year due to weaker stimuli coming from the global economy.

Selected key figures for macroeconomic trends in the Federal Republic of Germany [1]

	2009	**2010**	**Annual projection 2011**
	Year-on-year changes (%)		
Gross domestic product (price-adjusted) Employment (domestic) Unemployment rate (as defined by the Federal Employment Agency) [2]	**-4,7** 0,0 8,2	**3,6** 0,5 7,7	**2,3** 0,8 7,0
GDP by expenditure (price-adjusted) Private households and private non-profit institutions serving private households Machinery and equipment Construction	 -0,2 -22,6 -1,5	 0,5 9,4 2,8	 1,6 8,0 1,7
Domestic demand	-1,9	2,6	2,0
Exports Imports External balance of goods and services (contribution to GDP growth rate) [3]	-14,3 -9,4 -2,9	14,2 13,0 1,1	6,5 6,4 0,4
Gross wages and salaries per person employed (nominal)	-0,2	2,2	2,1

[1] Up to 2009, preliminary figures from the Federal Statistical Office as of 12 January 2011;
[2] Based on total number of persons employed;
[3] Contribution to GDP growth rate.

[1] Annual Economic Report “Germany on the upswing – securing the prosperity of tomorrow” (2011): Federal Ministry of Economics and Technology. www.bmwi.de

The economic rebound is also delivering an upswing in employment. During the crisis, Germany avoided major job losses despite the drastic decline in industrial output. In recent years, employees and employers have adopted responsible wage agreements and taken forward-looking entrepreneurial decisions (e.g. short-time work) - and have thereby made a significant contribution towards improving the competitiveness of German companies. Total employment even reached records levels in 2010 at 40.5 million persons; this is also the highest level since reunification. Almost all of the newly created jobs are positions requiring social insurance contributions, and most of them involve full-time employment. The Federal Government anticipates that the sustained economic expansion will further improve the situation on the labour market, albeit at a more moderate pace. In 2011, the number of employed persons is projected to increase by 320,000 on average compared to 2010.

Real household disposable income rose at a faster pace in 2010 than at any time since 2001. The main factors contributing to this increase include positive developments on the labour market and moderate trends in price levels, together with Federal Government tax relief measures that took effect last year. These developments are boosting the recovery of the domestic economy. Consumer spending increased noticeably in 2010, contributing 0.3 percentage points to overall economic growth. The Federal Government expects real consumer spending to increase solidly by 1.6 percent in 2011.

1.2 Ensure growth-friendly consolidation

The upswing continues to face risks, which are connected primarily to developments in the global economy. Because of its openness and its strong international linkages, Germany's economy continues to be heavily influenced by global economic developments. It is to be expected that the pace of global economic growth will slacken a bit this year. While the underlying level of dynamism remains high in emerging economies, the post-crisis pick-up is now slowing around the world. Furthermore, many governments are now scaling back the expansive policies they adopted in response to the crisis. The public and private sectors in the United States and Japan are facing necessary fiscal consolidation processes. This need is even more pronounced in certain European countries.

Economic policy now has to face the challenge of setting the right course that will strengthen the domestic forces for growth over the long term and thereby secure the prosperity of tomorrow. Following the crisis-related government interventions of recent years, the balance between state and markets needs to be restored. To this end, state-run measures to overcome the crisis will be successively phased out as part of the Federal Government's concerted exit strategy: applications for credits and guarantees under the Business Fund Germany were accepted only until 31 December 2010. In addition, the special rules adopted for short-time

employment schemes will expire in March 2012. Likewise, the Federal Government intends to roll back its crisis-related bank holdings and bank guarantees as soon as possible in accordance with the financial health of the respective institutions.

The Federal Government has started the necessary growth-oriented consolidation of public finances. This will involve limiting government spending, enhancing incentives, and placing a continued priority on funding for education and research. The consolidation package adopted by the Federal Government reflects this shift in fiscal policy and emphasises smart ways to reduce subsidies. The package aims to achieve structural consolidation that strengthens growth potential and enhances confidence in the stability of the Euro. In this way, the Federal Government is adhering to the requirements stipulated by the new constitutional debt rule. This resolute consolidation strategy will also give the Federal Government fiscal leeway to provide some tax relief that will further boost the dynamism of the domestic economy. The Government already intends to simplify the structure of the tax system in the near future. Low and middle income earners in particular are to be provided with tax relief as quickly as possible. This will be contingent upon the achievement of sufficient fiscal space while maintaining compliance with the debt rule.

1.3 Demographic change as an opportunity

The German economy's future growth potential will be strongly influenced by demographic change. For this reason, the Federal Government's policies are geared towards increasing the labour force participation of women and older people in particular as well as low-skilled workers and individuals with an immigrant background. At the same time, it is important to further reduce structural unemployment in Germany and to get more people into employment. To this end, the Federal Government will optimise incentive structures in order to further improve the functioning of the labour market. The Federal Government is committed to the system of free collective bargaining. This system is an indispensable part of the policy framework that constitutes the social market economy. For this reason, the Federal Government is opposed to a uniform statutory minimum wage. Existing minimum wage rules will be evaluated by October 2011. The outcome of this evaluation will serve as a basis for deciding whether the current minimum wage rules will be retained or rescinded.

To remain innovative and competitive, the German economy needs well-trained, highly skilled workers. For this reason, the Federal Government is committed to improving the quality and breadth of education and training, and to enabling people at every stage of life to participate comprehensively in education and training programmes. In order to successfully counteract the impending shortage of skilled workers, Germany must first of all tap the full potential of its domestic workforce, while also taking steps to attract qualified foreign

specialists to Germany. To this end, the Federal Government will assess whether Germany's immigration laws need to be adapted accordingly. Support from and cooperative efforts between Government and social partners are crucial if Germany wants to successfully master the challenge posed by the impending shortage of skilled workers. In order to boost the dynamism of the economy, the Federal Government is taking further steps to foster the creation of new businesses and is improving the conditions for business succession. Furthermore, through measures such as the new Training Pact, we are helping small and medium-sized companies fill their demand for skilled workers.

1.4 Enhance performance incentives through competition, research and innovation

To boost competition in all sectors, the Federal Government will revise the Act against Restraints on Competition to further improve competitive conditions, particularly in the areas of merger control, monitoring to prevent abuses of market dominance, provisions on fines, and procedures governing violations of anti-trust rules. As a key step towards the further enhancement of competition on electricity and gas markets, the Federal Government will submit a draft bill to establish a market transparency authority for wholesale trading of electricity and gas.

By allocating an additional 12 billion euros for investment in education and research through the year 2013 - 6 billion for education and 6 billion for research and development - the Federal Government is clearly demonstrating its commitment to taking responsibility for the future. In addition, its High-tech Strategy provides key incentives to foster innovation. Future funding to promote key technologies will place a higher priority on finding solutions to urgent societal challenges (climate/energy, health/nutrition, mobility, safety/security and communication). An efficient transport infrastructure is essential prerequisite for boosting economic growth. For this reason, one of the Federal Government's top transport policy priorities is to maintain and enhance the quality of transport infrastructure - for railways, roads and waterways.

1.5 Achieve a secure, affordable and environment-friendly energy supply

In 2010, the Federal Government unveiled an Energy Concept that sets out guidelines for energy policy through the year 2050. The Energy Concept unites several crucial energy policy objectives - energy security, climate protection, economic growth and greater competitiveness - within a single strategy. It sets the long-term target of achieving an 80 percent reduction in greenhouse gas emissions by 2050, compared to 1990 levels.

To this end, it is intended to ramp up the production and use of renewable energy sources, making them the mainstay of energy supply. Achieving the national energy and climate policy targets will require substantial additional investments. The development of new technologies, the further expansion of power grids, and the integration of these grids into a European electricity grid are all equally as necessary as a new international climate protection agreement. The main fields of action are:

- Renewable energies as a cornerstone of future energy supply
- Energy efficiency as the key factor
- Nuclear power and fossil-fuel power plants
- An efficient grid infrastructure for electricity and integration of renewables
- Energy upgrades for buildings and energy-efficient newbuild
- The mobility challenge
- Energy research towards innovation and new technologies
- Energy supply in the European and international context
- Acceptance and transparency.

1.6 Central aims of energy policy

1.6.1 Supply security objective

The nuclear disaster of March 2011 in Fukushima resulted in renegotiations on the safety of energy supply and prevention of damage. Some states are furthermore sticking to nuclear power. The Federal Government has reassessed the remaining risks posed by atomic power and has decided to take a different path. Germany is going to strengthen the use of renewables and will be ending with nuclear power swiftly by the year 2022. The respective decisions of June 2011 have set the wheels in motion - the age of renewables is scheduled to start in 2050.

Security of supply means that, at any given time, there are sufficient sources of energy to meet demand. As a country poor in natural resources, Germany is particularly dependent on energy imports. Thus in order for Germany to maximize its energy security, it needs to ensure a diverse mix of energy sources and energy suppliers from around the world. This is particularly true in light of the Government's decision to phase out nuclear power. It is also crucial to increase energy savings and energy efficiency, because reducing energy demand through the more rational use of energy also makes a significant contribution to security of supply.

1.6.2 Environmental compatibility objective

Environmental compatibility means using natural resources as carefully and sensibly as possible. Effective climate protection is one of the greatest current global challenges in the field of energy policy. The Federal Government has launched a broad spectrum of initiatives that aim to enhance energy savings, promote the more rational use of energy, and increase the share of renewable energies in overall energy supply. To ensure that effective climate protection policies do not have a negative impact on the competitiveness of our companies, it is important to press forward with emissions reductions not only at the national level but also at the European and international levels.

1.6.3 Energy, climate and greenhouse gas reduction targets

Climate protection is the greatest challenge facing environmental policy. Climate researchers have identified numerous developments indicating that climate change is already underway. For example, of the ten hottest years on record since global temperatures started being compiled in the mid-19th century, seven of these have occurred during the past decade. In the view of many scientists, there is a high degree of probability that this development is attributable to human influence. For this reason, human-induced emissions of greenhouse gases - particularly carbon dioxide generated from fuel combustion - must be drastically reduced across the globe.

In the 1997 Kyoto Protocol to the United Nations Convention on Climate Change, the industrialised nations committed themselves to reducing their emissions of six greenhouse gases by at least 5 percent over 1990 levels within the commitment period 2008-2012. The member states of the European Union reached an agreement on how they will divide up their share of emissions reductions amongst themselves: under this agreement, Germany's emissions reductions target is 21 percent. From 1994 through 2006, Germany cut its greenhouse gas emissions by nearly 19 percent. This was chiefly a result of modernisation processes in the new Länder, but measures implemented as part of the Federal Government's climate protection programmes played a key role as well. Germany expects to fulfil its 21 percent emissions reductions target within the 2008-2012 commitment period without needing to adopt any additional measures.

1.6.4 Integrated Energy and Climate Programme

On 5 December 2007, the Federal Government unveiled its Integrated Energy and Climate Programme, which aims to set a global example in the fields of energy and climate policy and is suited to the needs and capabilities of a modern national economy. The launch was timed to

coincide with the kick-off of the United Nations Climate Change Conference in Bali, which was held from 3-15 December 2007. The programme is based on the conviction that energy must be used with much greater efficiency than is currently the case and a much higher priority must be placed on the use of low-carbon energy. The adopted measures aim to prove that climate protection is both affordable and compatible with economic growth. For this reason, the Federal Government is pursuing policies that deliver favourable results in keeping CO_2-emissions low, but that are also as cost-effective as possible. Our aim is to achieve positive environmental outcomes without having a negative impact on consumers and the competitiveness of German business.

1.6.5 Efficiency objective

Market economy structures and effective competition are key building blocks for ensuring the economically viable - i.e. efficient - supply and use of energy. For example, the ongoing liberalisation of electricity and gas markets throughout Europe is essential for fostering competition and ensuring competitive prices in this sector, which was formerly dominated by monopolies. This not only benefits industrial and private consumers, it also strengthens Germany's international competitiveness as a place to do business.

2. Policy measures and market drivers influencing forest sector

2.1 On the way to a “green economy”

With its National Energy Strategy the Federal Government is ensuring that

- energy supplies will not be interrupted,
- the cost of power does not become prohibitive,
- Germany remains an attractive place to do business and that
- climate change mitigation targets will be met.

Boosting energy efficiency is the key to this, by using modern technologies to reduce electricity consumption or by refitting our buildings, which in any case raises their value. The aim is to make Germany one of the most energy-efficient economies while retaining a high level of prosperity. It will be putting in place the pertinent legal framework and introducing economic incentives, while making sure that all measures taken are affordable, cost-efficient and effective.

A faster phase-out of nuclear energy requires a faster reorganisation of energy supply - a process started under the National Energy Concept. Climate protection will remain the decisive driving force. The climate targets agreed in the Energy Concept will be adhered to. This sends a strong signal for investment in innovation and technological progress. The

thorough revamping of energy supply in Germany is a task for future decades, and is thus above all an opportunity for future generations. Political decisions in order to combat climate change, to save energy and the latest decisions to close down nuclear power in Germany increasingly influence forestry, timber markets and timber trade.

2.2. Protecting the global climate – strengthening the role of renewables [2]

Even without nuclear power Germany is sticking to the target of reducing emissions of greenhouse gases by 40 percent until 2020 and by at least 80 percent until 2050 (taking 1990 as a base year). By 2020 power generated from wind power, biomass, solar power and other renewables is to account for a minimum of 35 percent of the total (2010: nearly 17 percent achieved) and in heat consumption up to 14 percent (2010: nearly 10 percent achieved). In the course of the further development of its Biomass Strategy the Federal Government has revised the original goal of expansion for biofuels. In the year 2020 the target now is 10 percent instead of 12 percent (2010: nearly 6 percent achieved).

Following the main guiding principles “security of supply”, “economic efficiency” and “environmental protection” the Energy and Climate Programme contains of about 30 key elements including a package of different acts and ordinances. Offering incentives for modernisation and technological innovation the programme aims at stepping up the number of jobs within the renewable energy sector. Some examples of measures:

- To increase the share of renewables within the electricity sector significantly, an amendment of the Renewable Energy Sources Act with new provisions for regulating tariffs also for biomass will enter into force in 2012.
- Obligations to use renewables in new buildings are laid down in the Renewable Energies Heat Act. All owners of newly erected buildings are obliged to use a certain amount of renewables for their heat requirements (solar radiation, geothermal energy, ambient heat or biomass). For example, the use of biomass has to cover at least 50 percent of the new building’s heat demand. However, pellets, wood chips and fuelwood may only be used in furnaces which comply with strict national provisions on air quality control and have a particularly high boiler efficiency factor. Alternatively it is possible to improve insulation of buildings, obtain heat from district heating systems or use heat from combined heat and power generation (CHP).

[2] Renewable energy sources (2010): Data of Federal Ministry for the Environment, Nature Conservation and Nuclear Safety based on information supplied by the Working Group on Renewable Energy Sources-Statistics (AGEE-Stat). **www.bmu.de**

- Since the Federal Market Incentive Programme for renewable energies was launched in 2000 it has successfully provided financial support, amounting in 2010 to 346 million euros, which in turn triggered investments of 2.15 billion euros.
- New Sustainability Ordinances for biofuels and electricity from biomass shall ensure that when producing biomass for biofuels and electricity, a minimum requirement for sustainable management of resources and for the conservation of natural habitats are complied with. Furthermore the entire production, processing and supply chain must show a certain potential for reducing greenhouse gases.
- The Act on Combined Heat and Power Generation and a draft ordinance for small and medium combustion installations in order to reduce particulate emissions are additional examples for improvements of framework conditions for renewables.
- The German National Biomass Action Plan, which outlines measures for the expansion of bioenergy, is expected to influence future development of the wood energy market, even though it is not legally binding.

2.3 Swift planning and authorisation, new bridging technologies

Germany will achieve its targets for expanding the use of renewables if plants can be planned and permits issued swiftly and without excessive red tape. The new Planning Acceleration Act will make it easier to build solar plants beside and on buildings. New options for repowering wind power plants are to be made easier to use. It is also to be possible in future to specifically designate areas for the generation, distribution, use and storage of electricity, or heating or cooling power, generated from renewable energies like biomass or by combined heat and power units. Today, Germany’s electricity networks are not yet geared to the transport of power generated from renewables. The Network Expansion Acceleration Act will make it possible to lay new high-voltage lines more quickly, also across state boundaries. This will foster north-south transport, for instance. An amendment to the Energy Management Act will strengthen the foundations on which to build intelligent networks and storage systems, by improving the conditions for intelligent electricity meters, to give but one example.

To close down nuclear power stations means that other resources will have to fill the gap in order to ensure the stability of the power network in the long term and to balance fluctuations in power generation. The Planning Acceleration Act is to ensure the swift expansion of additional capacities. By 2013 new gas- and coal-fired power stations that are already under construction should go online with a combined capacity of some 10 GW. A new Power Station Promotion Programme for small and medium-sized power generators will also help ensure secure supplies. The Federal Government also intends to improve its promotion of combined heat and power units and continue this beyond 2016. Importing nuclear power is not a viable option. Modern, highly efficient gas- and coal-fired power stations are well suited

to ensuring the swifter switch-over to power generated from renewable energies. They can balance out the fluctuations in power generated from wind or solar plants.

2.4 Climate Change Programme for the Buildings Sector

The buildings sector is source of nearly 40 percent of Germany's entire end-use energy demand. The CO_2-savings targets in the buildings sector are very important for Germany to meet its climate change obligations. By 2050 it is intended to cut the demand for primary energy sources by 50 percent. This will only be possible if massive energy savings and a boost in energy efficiency can be achieved. The power used to heat our housing stock is to be cut by 20 percent until 2020. By 2050 buildings in Germany are to be practically climate-neutral, i.e. all the energy they need will be generated from renewable sources.

The climate change programme in the buildings sector is supported on various levels. It primarily covers the following areas:

- Public relations: organising events and symposia, campaigning for energy efficiency in the buildings sector (Development Loan Corporation programmes), promoting the German Energy Agency (dena) as a centre of excellence for energy efficiency, brochures on energy-efficient construction,
- Incentive measures: Development Loan Corporation programmes to improve the energy performance of buildings and for particularly energy-efficient new buildings, urban restructuring,
- Regulatory measures: amending the Energy Conservation Regulations, introducing energy certificates in existing buildings,
- Research and innovation: application and contract research for energy-efficient construction, "Future Construction" research initiative.

All of the programme measures are designed to reduce dependency on the fossil fuels petroleum and natural gas, to ensure efficient use of energy and security of supply, and to increase energy efficiency and the use of renewable energies. This will bring about a reduction in climate-relevant CO_2-emissions and contribute significantly to compliance with the Kyoto climate change obligations.

The 2005 National Climate Change Programme and the 2007 Allocation Act set a limit on carbon emissions of 120 million tonnes of CO_2 annually for the period 2008 to 2012. The savings objective was increased again in the 2008 to 2012 National Allocation Plan. All of these activities help to further increase energy efficiency, encourage investment in energy conservation in existing buildings and in new developments, and help reduce greenhouse gas emissions at the same time. The long-term objective is to educate consumers and tenants,

encourage investment, train the construction industry and motivate the planning profession so that the full economic potential can be tapped, particularly in terms of improving the energy performance of existing buildings.

2.5 Intensified efforts to reduce energy consumption of buildings

Since 2006 renovation and construction of about 2.5 million dwellings have been promoted in order to improve energy efficiency with the result of 5 million tonnes CO_2-savings per year. In 2011, the state funding for improving energy efficiency of buildings has been expanded. The former restriction of the KfW funds to schools, as well as to facilities for children and young people ceased to apply. Now, all buildings fulfilling a municipal and social purpose can be upgraded with the funding. Club houses, town halls or hospitals are now eligible for funding, too. This is an important step in the effort to improve the energy efficiency of existing buildings and to relieve the municipalities' overstrained budgets. After all, improving the energy efficiency of a building will reduce service charges considerably in the long run. The measure was a step towards implementing the ambitious goals set by the Federal Government with its energy strategy. To accelerate renovation and refurbishment, fundings of 1.5 billion euros per annum are aspired.

The following applies to both of the KfW-programmes "Energy efficient refurbishment – Municipalities" and "Social investment – Improving the energy efficiency of buildings": In the future, as a principle all non-residential buildings of the municipal and social infrastructure are eligible for funding. So far, funding had been restricted to schools, day care centres for children, gymnasiums and indoor swimming pools for schools as well as buildings for social work with children and young people. Now that the range of eligible buildings has been extended, municipal and non-profit agencies can benefit from low-interest loans for improving the energy efficiency of buildings such as town halls or hospitals, too. This also applies to club houses that are used all year round. By widening the scope of eligibility, municipalities as well as non-profit organisations and associations will be supported in their efforts to tackle climate change and protect the environment. At the same time, associations and sponsors of social facilities other than the local authorities will now be able to benefit from funding, too.

Reducing emissions of pollutants is good for the environment and helps to tackle climate change, while both home owners and tenants benefit from lower energy costs. The programmes trigger investment. They create and safeguard jobs, especially in the small and medium-sized enterprises of the construction industry and ancillary trades. Building and housing policies also have to provide appropriate responses to social changes. Thus, the new

programme entitled “conversion to meet the needs of the elderly" is one response to the new requirements that housing has to meet as a result of demographic change.

3. Framework conditions for the forest products markets sector

Globalisation means challenges and opportunities not limited within national borders. Industrial uses of renewable resources make an important contribution to protecting the climate and the environment, saving fossil fuel reserves, expanding domestic sources of raw material and sustaining rural areas. In order to ensure food supply as well as sustainable supply of raw materials and energy for a growing world population, the mitigation of climate change, sustainable use of renewables and the preservation of natural environment are global challenges. In view of the short supply of fossil resources e.g. from crisis-ridden regions of the world, sustainable forest management makes an important contribution to securing the future needs of raw materials and energy. This means that the demands made of natural resources will increase in a global scale and it is of growing interest to use them responsibly.

Forests and sustainable forest management play a major role to secure wood supply for forest-based industries like sawmills, panel-, pulp- and papermills. Germany has over 11 million hectares (ha) of forests which have been sustainably managed for generations. The fact that wood increment has been significantly higher than timber removals has led to the creation of substantial timber stocks. Forests play the key role in meeting timber demand, which has also increased significantly during the last decade. Besides timber demand this is mainly due to the renaissance of bioenergy with woody biomass as most important source. Over the past years timber industry had to face some bottlenecks in spruce supply which resulted in some reduction of the respective timber stock.

German forests	
11.1 million ha forest area	31 percent of territory (+ 1 million ha since 1960)
3.4 billion m^3 timber stocks	+ 700 million m^3 since 1986 (average 330 m^3/ha)
annual increment	up to 120 million m^3 (average of about 11 m^3/ha)
70 percent of forest area certified	PEFC 7.3 million ha; FSC 0.4 million ha
„deadwood“ in the forest	about 24 m^3/ha

Source: Oehmichen, K. et al. (2011): Inventurstudie 2008 und Treibhausgasinventar Wald. Landbauforschung vTI agriculture and forestry research - Sonderheft 343, Braunschweig

3.1 Climate protection and energy policy

As mentioned above climate protection and energy policy are increasingly influencing the whole forest-based sector. In an effort to promote biomass-generated electricity, the EU

Commission presented the EU-Biomass Action Plan in December 2005 and called upon member states to draw up their own national biomass action plans. In line with the European Council's decisions from March 2007, EU-wide binding targets were set for 2020. Announced on January 2008 the EU-Climate and Energy package designed for use in implementing these ambitious goals has since been adopted.

EU climate protection targets 2008 to be met by 2020	
overall energy demand	reduction by 20 percent
renewable-generated electricity	share of 20 percent
greenhouse gas emissions	CO_2-reduction by 20 percent
renewable energy in fuel supply	increase share to 10 percent [1)]

[1)] only binding if energy production is sustainable and second generation biofuels are available commercially

Along the EU-requirements the Federal Government has made a clear commitment to promoting renewable energy sources and raw materials, whereas in pursuing national targets the following is to be considered:

- Biomass demand for energy production competes with food crops and the many uses of biomass as a raw material; competition for biomass also occurs between the various types of energy production. Intensified "wood cascading" (preference of material use prior to energy use, multiple-use of wood) is gaining importance.
- Identification of additional wood sources inside and outside forests, which can be sustainably mobilised.
- Identification of the most promising and efficient segments for the expansion of the material and energetic use of renewable resources in order to support climate protection targets (sequester CO_2 in forests, timber products and by substitution of fossil energy sources).
- Ensure environmentally sound production of renewables among other things through measures like legislation, sustainability standards or certification schemes.
- Considerable research effort is needed in the biomass and raw material sector in order to support breakthroughs in efficient and resource saving innovative technologies (e.g. integrated solutions for industrial use and energy like biorefinery).
- Greater use of bioenergy and renewable materials must enjoy broader public acceptance (in consideration with the requirements of sustainability).

Renewable raw materials like timber and woody biomass offer significant opportunities to mitigate the effects of climate change, secure supply and promote economic development. CO_2 is sequestered not only while trees grow, but also accumulated in timber products. Every cubic metre of timber removes just about 1 ton of CO_2 from the atmosphere and stores it in

the form of carbon, in some cases over many decades. Using timber as an energy source helps to replace fossil fuels. Renewables also serve in boosting domestic value creation especially in rural areas.

3.2 Sustainable forest management and forest products certification

The basic standards for securing sustainable management of German forests are set by the Federal Forest Act (enacted in 1975). This legal framework outlines predominant guidelines which are specified in due consideration of the typical regional forest and forest ownership patterns by respective regulations on level of the Federal States (Laender). Additionally, about 70 percent of the total forest area have been voluntarily certified so far, including 7.4 million ha forests certified according to PEFC-criteria (Programme for the Endorsement of Forest Certification Schemes) and 400,000 ha according to FSC-criteria (Forest Stewardship Council). The Federal Government supports this initiative and is backing the further development, harmonization and mutual recognition of the competing certification systems. It takes the view that wood and wood products may only be procured from stocks with credible certificates.

Certified forest management is important due to the fact that illegal logging and overexploitation still prevail in a number of wood exporting countries, notably in the tropics. To avoid purchasing illegally produced timber the Federal Government has adopted a procurement regime for wood products in January 2007 (valid for four years). In accordance with this regulation, wood products procured by the Federal Administration must demonstrably come from legal and sustainable forest management. The bidder has to furnish proof of this by presenting a certificate of FSC, PEFC, comparable certificates or by producing individual specifications. Comparable certificates or individual specifications are accepted, if the bidder can prove that the criteria of FSC or PEFC applying to the respective country of origin have been met.

A study conducted jointly by the Johann Heinrich von Thünen Institute and the Federal Agency for Nature Conservation with the purpose of evaluating the efficiency of the federal procurement regime has shown that the certification of forest management is indeed a successful way of ensuring that purchased products are produced sustainably. Against this backdrop, the regulation was renewed in January 2011 and is now valid without limited time frame. A review will be conducted in 2013 in order to ascertain if and how wood and wood-based products from countries with which the EU has concluded Voluntary Partnership Agreements (VPA) can be included in the procurement regime (Internet-link: http://www.bmelv.de/SharedDocs/Standardartikel/EN/Agriculture/forestTimberHunting/ProcurementRulesWoodProducts.html).

3.3 Sustainable and legal wood trading policies

An important initiative on international level is the EU-FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan on Illegal Logging, representing a joint action programme against illegal logging. The Federal Government is backing preparations and negotiations with potential candidate countries of voluntary FLEGT partnership agreements (VPA) with the EU. So far negotiations with six tropical countries have been concluded successfully. With several others negotiations are ongoing.

The EU-FLEGT approach is supplemented by the EU timber regulation (995/2010)., which is to contribute effectively to combating illegal logging and associated trade at the global level. The regulation prohibits to place illegal timber on the common market and commits operators who place timber and wood based products on the market to furnish proof of legality by the application of due diligence systems. The regulation will be effective from march 2013. The German Government supports this approach and is an active player within the development and implementation of this regulation.

Work on improved methods for timber origin identification (genetic and isotopic fingerprinting methods) continues. Germany initiated an international project with ITTO to implement these methods in the Congo Basin (starting in 2012) and another project with Bioversity International to establish an international facility in Malaysia in order to coordinate all related work (which started this year). Countries and organisations are invited to participate in these projects!

3.4 Wood demand and raw material potential

Renewable resources like wood are becoming increasingly important in a society geared towards sustainable development. As a multi-purpose raw material, woody biomass has become highly demanded with several major uses. Due to its many different utilisation possibilities it has the potential to successfully break into new markets and its carbon balance is mostly superior to those of competing raw materials. In general, the annual timber harvest in German forests is still clearly below increment. There is space for mobilising additional domestic resources e.g. regarding hardwood species and small forest holdings. One decisive question is to what extent German forests will be able contributing to meet growing future demand without jeopardising sustainability rules. Striving for achievement of the given climate protection targets 2020 and beyond it is expected that timber demand for material and energy purposes in Germany could reach volumes of about 190 million m^3 by 2020 and up to 240 million m^3 by 2030. In spite of existing timber and biomass stocks to be mobilised, the scenarios of experts

are resulting in calculated "supply deficits" as the following examples of the EUwood-study demonstrate.

Wood balance scenario 2020 for Germany in IPCC scenario A1 (million m³ per year)			
consumer	**demand 2020**	**potential 2020**	**wood source**
sawmills	41.7	78.0	removals (over 7 cm diameter)
veneer, plywood, panels	29.6	20.8	forest residues
paper	13.6	3.4	bark
other material use	5.6	5.5	landscape care wood
woodfuels, biofuels	9.9	16.2	sawmill by-products
biomass powerplants	41.6	7.6	other industrial wood residues
households, others	49.0	4.9	black liquor
		9.8	solid wood fuels
		9.4	post consumer wood
	190.9	**155.5**	
	- 35.4		**computed supply deficit**

Source: Mantau, U. et al. (2010): EUwood-Study "Real potential for changes in growth and use of EU forests". Final report: TREN/D2/491-2008. Hamburg/Germany

Wood resource balance 2030 for Germany in IPCC scenario A1 (million m³ per year)			
consumer	**demand 2030**	**potential 2030**	**wood source**
sawmills	50.0	78.3	removals (over 7 cm diameter)
veneer, plywood, panels	44.4	20.7	forest residues
paper	17.1	3.4	bark
other material use	6.0	6.2	landscape care wood
woodfuels, biofuels	14.6	19.4	sawmill by-products
biomass powerplants	65.7	8.8	other industrial wood residues
households, others	51.0	6.3	black liquor
		12.3	solid wood fuels
		10.1	post consumer wood
	238.7	**165.6**	
	- 73.1		**computed supply deficit**

Source: Mantau, U. et al. (2010: 143): EUwood-Study "Real potential for changes in growth and use of EU forests". Final report: TREN/D2/491-2008. Hamburg/Germany

The estimated supply deficits ("supply gaps") must be considered as theoretical figures because in real terms markets as well as enterprises will react on shortfall of timber and woody biomass in due time. Besides price movements such developments may cause suitable reactions on the markets like reduction of capacities, shutdown of facilities or relocation of investments to more favourable raw material supply regions. To avoid such scenarios come true it is necessary not only to mobilise existing timber and woody biomass stock in the forests, but also to tap new resources (e.g. forest residues, fast growing species, landscape care wood). Another aspect is to increase imports of raw materials, semi-finished and finished products. Regarding raw materials there may be only limited options due to a generally growing global demand, additional costs for transport and adverse impacts on life-cycle-balance.

3.4 Competing requirements of society as challenge for multifunctional forestry

However, society places growing demands on forests that go beyond only being supplied with raw materials. These requirements must also be taken into consideration. They include climate-, nature- and species protection as well as the important role of forests to safeguard and maintain clean water and pure air. And finally, forests are being used more intensively as areas for rest, recuperation and leisure particularly in urban areas. Growing demand for forest services can offer new opportunities. However, in some cases it can also result in conflicting targets (e.g. between nature conservation and wood mobilisation).

Due to overlaps of different protection categories (e.g. MCPFE Assessment Guidelines, Natura 2000 areas) it is estimated that in general about 2/3 of German forest area is already covered by more or less strict protective functions (landscape and nature conservation). The Federal Government's Strategy on Biological Diversity envisages removing 5 percent of the forest area from use by 2020. Excessively large numbers of game can further aggravate this situation in certain areas. Demands by society or interest groups for forests to provide additional services for environmental protection and nature conservation are limiting yield potential and making it more complicated to supply timber.

Sustainability is a main guiding principle of forest policy. Decisions and actions must be based on the three pillars of sustainability (ecology, economy and social matters) in order to make best use of resources and taking into consideration the needs of future generations. Renewable resources will gain importance in a society based on such principle. This raises the question as to how forests can best contribute towards meeting future challenges. Expectations of society on forest functions are increasing not only due to a higher demand for timber and woody biomass for energy purposes, but also as a consequence of more stringent requirements regarding nature conservation, adaption of forests to climate change, their possible contribution to reduce greenhouse gas emissions and services for recreation. One major task of future forest policy is to aim at a resilient balance between differing interests of society.

4. Wood raw material sectors in Germany

Whereas roundwood processing during the 1990ies moderately rose from about 60 million m^3 to 80 million m^3, it escalated during the period from 2002 to 2007 to 128.1 million m^3 per year. In 2008 the global financial crisis resulted in an economic slump but in the meantime the 2007 production levels have been achieved again. Numerous investments in roundwood processing facilities during the 5 years from 2002 to 2007 resulted in significant growth of output and competitiveness. Enterprises benefited from buoyant global markets and realised high

sales volumes especially with export business. Since 2004 German timber trade is characterised by net export surplus (quantitative).

Roundwood utilisation in Germany accounts for about 80 percent softwood and 20 percent hardwood species (beyond 70 percent of overall timber volumes designed for material purposes). Since softwood potentials in German forests are near sustainability limits, it is necessary to develop alternative utilisation and supply strategies including improved raw material efficiency and "wood cascading".

4.1 Material wood use

According to official statistics, in 2010 about 54 million m^3 were felled (plus 13 percent against 2009). Of the total fellings, spruce accounted for 56 percent, pine for 22 percent, beech for 19 percent and oak for 3 percent. It is assumed in the medium and long term that roundwood demand in Germany will continue to increase. Comparing the development of felling in recent years with German forest resource assessment data clearly show that in comparison with potential coniferous wood resources (in particular potential resources of spruce) in hardwood there is still considerable untapped potential. In order to meet future challenges various supply options are therefore being discussed (e.g. mobilisation of existing resources like forest residues, rise of raw material efficiency, intensified recycling and multiple wood use, imports, short-rotation species on farmland or landscape care wood).

Due to extraordinary high imports of coniferous roundwood there has been a roundwood net export surplus in 2010 (+3.8 million m^3) for the first time since 2004. German timber industry is mainly based upon softwood processing. Predicted growth of global wood demand on the one hand and limited softwood potentials in the forest on the other hand imply a major future challenge for the enterprises (e.g. to open up additional import opportunities for softwood, to develop new markets for hardwood products).

Roundwood markets are strongly linked to developments of the construction sector. Regarding wood consumption this industry sector is most important, for in Germany almost 2/3 of removals are transformed in products designed for building construction and housing elements. The German construction, housing and property industries form a key sector for growth and employment. With a workforce of around 3.8 million and gross value added of 400 billion euros, it is among the most important sectors of the national economy. In Germany there are about 16 million buildings, of which 80 percent are older than 25 years. This means a huge dormant potential to be mobilised. Action has been taken in 1978 when the first Thermal Insulation Ordinance entered into effect. Since then the energy efficiency of buildings has been improved step by step. Nevertheless we are still far away from where we would like to

be. Many buildings still do not meet any energy saving requirement. Building owners and tenants increasingly realise that energy saving is not only an environmental issue but also most interesting in economic matters. For example cost for heating and hot water make up around 87 percent of total energy consumption of private households. 80 percent of those costs could be saved by professional refurbishment like improvement of building shell and modern building services.

Important incentives for investments in the building sector besides the Renewable Energies Heat Act is the development of a Green Building Certificate in close cooperation with research institutions and interested associations ("round table" with about 130 participants). First German Sustainability Certificates have been granted to office buildings in January 2009 (further information: www.dgnb.de). Ecological advantages of sustainable wood products (e.g. CO_2-neutral) may open up new perspectives within the building sector, especially by modernisation and renovation. But low-energy buildings are in general independent from construction material. This means intensified competition between construction materials.

4.1.1 Sawnwood (softwood and hardwood)

In 2010, about 11,200 people were employed in the German sawmilling industry (-0.6 percent against 2009). The total turnover amounted to 3.7 billion euros (change from previous year: + 24.6 percent). With an export quota of 35.1 percent, the export turnover amounted to 1.3 billion euros. Compared with 2009, the entire export turnover increased by 19.9 percent (companies with 50 and more employed persons).[3]

With about 21.2 million m^3 the domestic production of sawn softwood (sawnwood coniferous) increased by 7.7 percent in 2010 compared to 2009. The apparent consumption of sawnwood coniferous was estimated to 18.4 million m^3 (+9.3 percent compared to 2009) and the domestic production to 21.2 million m^3 (+7.7 percent compared to 2009). In 2010 the German exports of sawn softwood amounted to 6.5 million m^3 and the imports to 3.7 million m^3 in 2010. The annual apparent consumption of sawn hardwood amounted to 1.0 million m^3 (+0.8 percent compared to 2009) and the domestic production to 1.2 million m^3 (+5.8 percent compared to 2009).

4.1.2 Wood-based panels (particle board, fibreboard, MDF, OSB, plywood)

In 2010, the German panel industry employed approximately 12,200 people (-9.3 percent against 2009) and recorded a total turnover of 4.2 billion euros. Compared with 2009, the total turnover increased by +2.8 percent. About 34.8 percent of turnover depended on foreign trade

[3] „16.1 Säge-,Hobel-u.Holzimprägnierwerke" (StBA: F 4 R. 4.1.1: Tab. 1.1; 1.2; 1.3)

(1.5 billion euro). Compared with 2009, the entire export turnover increased by +1.2 percent (companies with 50 and more employees).[4] The annual production of the German panel industry amounted to 9.4 million m³ of particle boards and to 4.7 million m³ of fibreboards. The apparent consumption of particle boards was estimated to 9.1 million m³ (+6.6 percent compared to 2009) and of fibreboards to 2.3 million m³ (+22.3 percent compared to 2009).

4.1.3 Pulp and paper

In 2010, approximately 38,200 people were employed in the German pulp and paper industry (-1.0 percent compared to 2009) at about 165 production sites (-3 percent against 2009). The total turnover amounted to 16.1 billion euro (change from previous year: +17.0 percent). With an export quota of 52.3 percent, the export turnover amounted to 8.4 billion euro. Compared with 2009, the entire export turnover increased by +18.5 percent (companies with 50 and more employed persons).[5]

German paper industry is number one in Europe. After the USA, China, Japan it ranks fourth in the world position. Its turnover yielded 14.4 billion euros in 2010 (+ 17 percent against 2009) and thus exceeded the level of pre-crisis year 2008. The annual production stood at 23.2 million tonnes (+ 11.2 percent against 2009), comprising of 3,000 different varieties of paper. The apparent consumption of graphic papers, papers and boards for packaging, sanitary and household papers and other papers and board in total was estimated to 19.5 million tonnes (+5.3 percent compared to 2009). Wood consumption by German pulp and paper mills was estimated to 10.6 million m³ in 2010 (compared with 2009: + 8 percent).[6]

4.2. Contribution of biomass to climate protection targets

As one of the most important renewable energy sources biomass has gained further ground. During the last 7 years, the contribution of renewables in final energy consumption increased from 143 to 275 TWh (share of end-energy-consumption in 2010: 11 percent). Biomass represents the most important pillar (70 percent) within the renewable scene. With a share of 9.8 percent regarding total heat supply (2009: 8.8 percent) it was possible to further on increase the significance of renewable energies last year. The dominating resource in this sector remained biomass (90 percent). In 2010 renewables contributed to the total electricity consumption with 16.8 percent (2009: 16 percent). In this sector biomass reached a share of about 31.3 percent. Last year, the renewable energies in Germany recorded investments of about 26.6 billion euros (+ 33.6 percent against 2009). The number of people employed in this sector reached 367,400 (+ 8.2 percent against 2009) – this is equivalent to a doubling since 2004. In

[4] „16.21 H.v.Furnier-,Sperrh.-, Holzfaserpl.-u.-spanpl." (StBA: F 4 R. 4.1.1: Tab. 1.1; 1.2; 1.3)
[5] „17.1 H.v.Holz-u. Zellstoff, Papier,Karton u.Pappe" (StBA: F 4 R. 4.1.1: Tab. 1.1)
[6] VDP (2011): Paper 2011: Annual Report. Tab. N2; N8; N16, N18)

2010 renewable energies contributed to climate protection with CO_2 savings of about 118 million tonnes (+ 12 percent against 2009) of which renewable energies count for nearly a half.

4.3 Wood energy

Wood for energy generation is an important contributor to this development. In the previous years, the bioenergy sector in Germany has developed continually and received extraordinary impetus due to the huge increases in oil and gas prices. For example heating with CO_2-neutral wooden pellets has increasingly become a cost-effective alternative to conventional fuels. In the period up to 2002, wood consumption for energy purposes by private and commercial demanders increased at a moderate rate. After that, there was a sharp rise in consumption which bottomed out in 2008 at about 52.9 million m³. Fuelwood consumption in private households formed the largest group of demanders (about 25.2 million m³). They were followed by large biomass thermal power plants (about 19.8 million m³). While private households mainly take fuelwood from forests, large biomass thermal power plants mostly use recovered wood and industrial wood residues. [7]

German producers of wood pellets also benefited from this development. Producing 0.3 million tonnes in 2005 (of which domestic consumption: 0.2 million tonnes) it was possible to increase production and domestic consumption in 2010 to 1.75 million tonnes (+ 9.3 percent against 2009). So far main raw material sources for pellet production are wood residues originating from softwood sawmills. In future, additional sources may become important (e.g. residues from forests, fast growing species, hardwood species). Fuelwood consumption in Germany is expected to further increase in 2011.

[7] Mantau, Udo (2009: 28; Tab. 1) Holzrohstoffbilanz Deutschland: Szenarien des Holzaufkommens und der Holzverwendung bis 2012. Landbauforschung vTI agriculture and forestry research - Sonderheft, Band 327, Braunschweig, S. 27-36 (http://literatur.vti.bund.de/digbib_extern/dk041641.pdf)