



Intelligent Energy  Europe

BAP DRIVER

DEVELOPMENT OF INTEGRATED NATIONAL BIOENERGY ACTION PLANS

**Operational Guideline for Policy Makers working
on template for National Renewable Energy Action
Plans**



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A. Introduction – the BAP DRIVER project and this Guideline

1. Background of this Guideline

1.1 The European bioenergy targets & legislation – a challenge for national governments

Key EU legislation and targets affecting national biomass policies

The governments of EU member states are exposed to great challenges to achieve the national renewable energy targets and requirements defined on EU level.

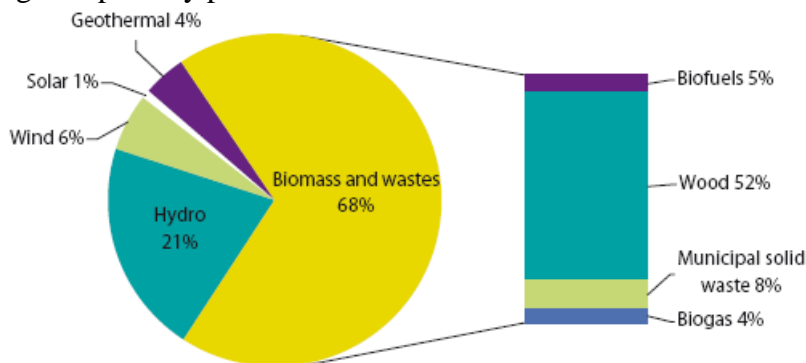
The main EU legislation affecting the bioenergy sectors is Directive 2009/28/EC on the promotion of the use of energy from renewable sources, amending and subsequently repealing previous Directives 2001/77/EC and 2003/30/EC. The Directive formulates the target of increasing the share of renewable energies in gross final energy consumption across the EU to at least 20% by 2020. This EU-wide target is split into the following national targets for the EU member states:

	Share of energy from RES in final consumption of energy, 2005	Target for share of energy from RES in final consumption of energy, 2020
Belgium	2,2 %	13 %
Bulgaria	9,4 %	16 %
Czech Republic	6,1 %	13 %
Denmark	17,0 %	30 %
Germany	5,8 %	18 %
Estonia	18,0 %	25 %
Ireland	3,1 %	16 %
Greece	6,9 %	18 %
Spain	8,7 %	20 %
France	10,3 %	23 %
Italy	5,2 %	17 %
Cyprus	2,9 %	13 %
Latvia	34,9 %	42 %
Lithuania	15,0 %	23 %
Luxembourg	0,9 %	11 %
Hungary	4,3 %	13 %
Malta	0,0 %	10 %
Netherlands	2,4 %	14 %
Austria	23,3 %	34 %

Poland	7,2 %	15 %
Portugal	20,5 %	31 %
Romania	17,8 %	24 %
Slovenia	16,0 %	25 %
Slovak Republic	6,7 %	14 %
Finland	28,5 %	38 %
Sweden	39,8 %	49 %
United Kingdom	1,3 %	15 %

In contrast to the share of attention in public debates on renewable energies it is the bioenergy sector which nowadays represents more than 2/3 of the primary production of RES in the EU 27. There are no reasons why this proportion should change fundamentally – in any case bioenergy is expected to provide the lion share to the achievement of the ambitious RES targets. Given the current state of development of these sectors across the EU, it is obvious that strong policy push by national governments is needed to achieve the goals.

Figure : primary production of RES in 2006 in EU27



Source: Eurostat

Source : Eurostat: Panorama of energy, 2009

Key requirements by EU to member states:

While acknowledging the need for a country-specific design of national RES policies, the EU requires member states to follow an integrated strategic approach. For that reason Art. 4 of the Directive obliges governments to adopt National Renewable Energy Action Plans (NREAPs) by 30 June 2010. To ensure a consistent quality of these Action Plans, the European Commission has established a detailed template¹ governments have to comply with.

¹ Commission Decision of 30.06.2009 establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC (Text with EEA relevance)

Although a separate national Biomass Action Plan (nBAP) is not required anymore, it should build an integral part of the overall NREAP, especially chapters concerning bioenergy policies. The NREAP should set out:

- Targets for the shares of energy from RES in transport, electricity and heating and cooling in 2020, as well as trajectories to achieve these targets 2010-2020;
- Strategic roadmap including adequate policy measures for achieving these targets;
- Assessment of national resources availability;
- Monitoring and impact assessment of policies.

Status of NREAP processes in the EU

According to Art. 4 I. of the RES Directive 2009/28/EC the NREAPs are due by 30 June 2010. Existing national action plans are widely insufficient or outdated. In the past many governments had adopted a “wait & see” attitude because they were awaiting the new legislations and requirements on EU level before they take national actions. Since the publication of the detailed template on 30 June 2009 they are now under high pressure to set up new NREAP in line with EC requirements.

1.2 The BAP Driver project –leveraging the development of national biomass action plans (BAP)

This guideline is a milestone of the EU project “BAP Driver”, an initiative by energy agencies from 8 European key bioenergy nations and the European Biomass Association (AEBIOM), funded by the European Commission (EC) under the Intelligent Energy Europe (IEE) programme. The BAP Driver project aims at identifying ways for improvement of current national policy frameworks for bioenergy in Europe, and at leveraging the process of developing country-specific Biomass Action Plans (BAP) which are now integrated in the NREAP.

In a first phase of the BAP Driver project in 2008/09, a comprehensive European Best Practice report was conducted, in which national biomass strategies and policy frameworks in 12 EU member states were comparatively assessed. In addition, a series of expert meetings were organised both on European and national levels in order to exchange ideas and transfer knowledge between key actors on the same issues.

Important outcomes of these processes are reflected in this guideline. Moreover the guideline takes into account the latest development on European level, i.e. the commencement of the Directive 2009/28/EC which requires member states to follow an integrated strategic approach. For further information on “BAP Driver” and download of key documents the project website may be consulted under

www.bapdriver.org.

2. Objectives & concept of this guideline

2.1 Objectives of this guideline

The main objectives of the guideline are:

- Inform / build capacities among national policy makers, also to make them understand the requirements of the EC for preparing NREAPs better;
- Transfer knowledge among EU member states, as well as from the EC and experts in the field;
- Give guidance to formulate, implement & monitor & evaluate national bioenergy strategies;
- Provide practical support to prepare NREAPs (bioenergy chapters) by using the input of the guideline when filling in the NREAPs.

Main measures to achieve these objectives

- Provide an integrated approach to structuring the extremely complex field of bioenergy policy making, in line with the requirements of the RES Directive 2009/28/EC and EC template for NREAPs;
- Highlight key issues to be addressed by policy makers in each main policy area, in line with the requirements of the RES Directive 2009/28/EC and EC template for NREAPs;
- Summarise key experiences / lessons learned gathered in 12 EU member states, as well as practical recommendations resulting from these experiences on how to do it better in the future.

2.2 Target groups (beneficiaries) of this Guideline

Main target groups (beneficiaries, users) of the guideline: political decision-makers on national and regional level in all EU member states:

- National (regional) governments setting national regulatory frameworks & defining NREAP, including chapters on bioenergy policies, typically the ministries for economy, energy, environment and agriculture;
- Public authorities and agencies managing support schemes & other policy measures for bioenergy;
- European Commission (EC), monitoring the delivery of NREAPs in line with EU-wide requirements.

2.3 Concept of this guideline

The guideline is structured in 5 major chapters corresponding to the main blocks of policy-making process:

Block 1 (= chapter B of this guideline): Modelling an integrated strategy / policy approach for the promotion of bioenergy, which – as far it makes sense - integrates

- All biomass sectors, both on the production side (forestry, agriculture, & fisheries and waste), conversion / transportation (supply chain) and on the user / demand side (electricity, heating & cooling, transport);
- All steps of the policy process (resource assessment > target setting > strategy formulation > policy implementation > policy monitoring);
- All administrative levels of the policy processes (national >/< regional >/< local);
- All policy perspectives (short > medium > long-term).

Despite a different structure, this approach is aligned to the contents of EC template for NREAP.

Block 2 (= chapter C of this guideline): Guideline for the assessment of national biomass resources

This block is related to chapters 2, 4 and 5 of the EC template for NREAP.

- Assessment of national energy demand (expected final energy consumption 2010-2020) => *corresponds to chapter 2 of EC template;*
- Assessment of national biomass supply (use of domestic resources vs. needs for imports; mobilisation of new resources incl. impact on other sectors such as agriculture and forestry; delimitation of technical / physical vs. economically viable potential for biomass use) => *corresponds to chapter 4.6 of EC template;*
- Differentiation of national biomass supply by sectors (electricity vs. heating & cooling vs. transport), as well as technologies (solid biomass, biogas, bioliquids & fuels) => *corresponds to chapter 5.1-5.2 of EC template;*
- Compliance with sustainability criteria for biofuels & -liquids incl. potential conflicts with other sectors (food, etc.) => *corresponds to chapter 4.2.10 of EC template;*
- Assessment of cross-country effects (trading, import of missing vs. export of excess resources, incl. use of cooperation mechanisms and participation in joint projects between EU member states and third countries => *corresponds to chapter 4.7 of EC template.*

Block 3 (= chapter D of this guideline): Guideline for the formulation of national bioenergy targets, strategies and action plans

This block is related to chapters 3, 4 & 5 of the EC template for NREAP.

- Setting of overall national targets 2020 & trajectories 2010-2020 => *corresponds to chapter 3 of EC template;*
- Differentiation of targets & trajectories by different sectors (bio heat & cooling, electricity and transport), as well as technologies (solid biomass, biogas, bio liquids & fuels) => *corresponds to chapter 5.1-5.2 of EC template;*
- Definition of overall national strategy / roadmap and/or concrete action plan to achieve targets=> *corresponds to chapter 5.4 of EC template;*
- Selection and design of policy measures => *corresponds to chapter 4.1-4.5 of EC template.*

Block 4 (= chapter E of this guideline): Guideline for the implementation of national policies in practice

This block is related to chapter 4 of the EC template for NREAP.

- Streamlining of administrative processes for licensing, grid connection, certification and/or participation in support schemes; also in building and spatial planning law => *corresponds to chapter 4.2.1 & 4.2.3 of EC template;*

- Strengthening the energy sector infrastructure & grids to integrate bioenergy installations => *corresponds to chapters 4.2.6 – 4.2.9 of EC template;*
- Information and integration of relevant stakeholders in policy processes => *corresponds to chapter 4.2.4 of EC template;*
- Clarification of technical specifications and implementation of quality standards for installations, as well as qualification measures key actors => *corresponds to chapter 4.2.2. & 4.2.5 of EC template;*

Block 5 (= chapter F of this guideline): Guideline for monitoring & impact assessment of national bioenergy markets and policies.

This block is related to chapter 5 of the EC template for NREAP.

- Market & industry monitoring in line with EC requirements => *corresponds to chapters 5.1-5.2 of EC template;*
- Policy performance measurement & impact assessment (incl. cost-effectiveness of policies) => *corresponds to chapter 5.3 of EC template*
- Ensuring compliance with sustainability criteria and implementation of corresponding schemes for bio fuels => *corresponds to chapter 4.2.10 of EC template.*

The guideline for each block is following the same structure:

- Step 1: Highlighting of key issues from the point of view of national policy makers, in line with the requirements of the RES Directive 2009/28/EC and EC template for NREAPs;
- Step 2: Summary of key findings (lessons learned) on these issues gathered by previous EU-wide best practice study, as well as formulation of recommendations to policy makers;
- Step 3: Reference to useful benchmark / best practice examples from EU member states contained in the [European Best Practice Report - Comparative assessment of national bioenergy strategies & biomass action plans in 12 EU countries, January 2009, 32 pages - executive summary.](#)

B. Model of an integrated bioenergy policy approach

1. Integration of different bioenergy policy fields – a high challenge for national policy makers

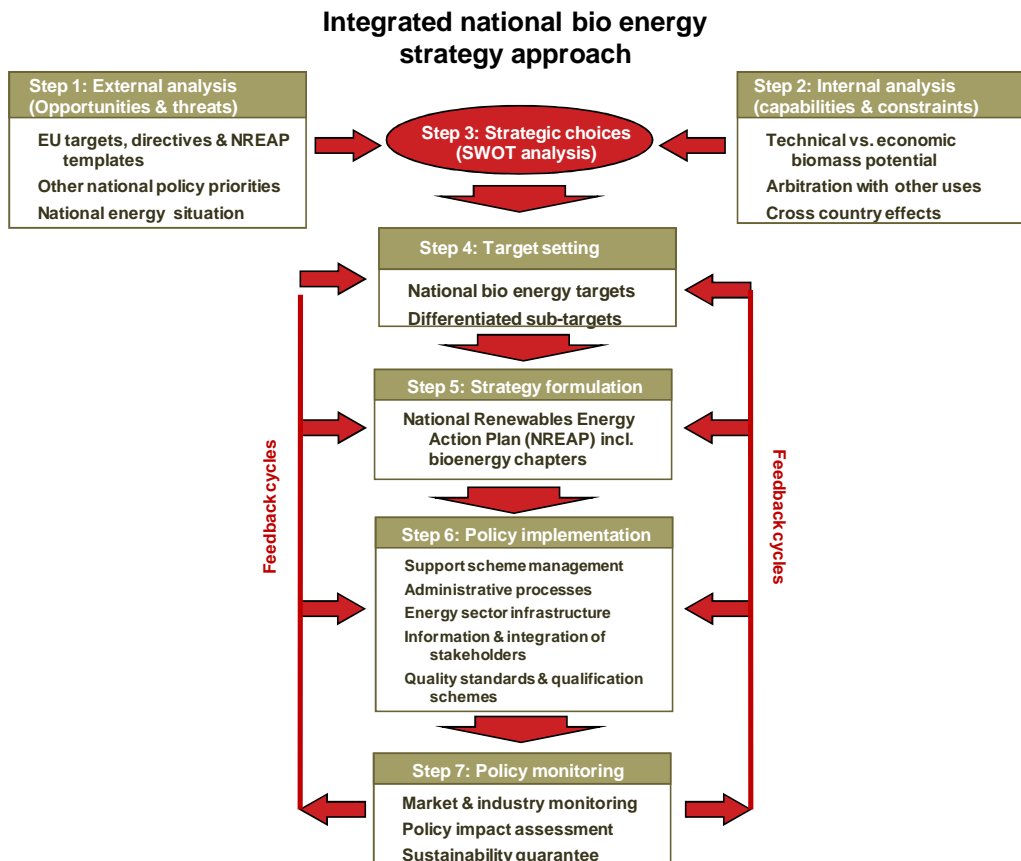
The main challenge for national policy-makers is obviously to integrate the very high diversity and complexity of the bioenergy sector in a well-balanced political strategy.

A national bioenergy strategy and therefore relevant parts of the NREAP must tackle the following policy fields:

- Different biomass sectors and/or steps of the value chains:
 - Production sectors:
 - Forestry/wood (and by-products of wood based industries);
 - Agriculture/energy crops (and by-products from agriculture and agro-industries);
 - Waste;
 - Conversion and transportation sectors (supply chains)
 - User sectors:
 - Electricity
 - Heating & cooling;
 - CHP (cogeneration);
 - Transportation;
- Different steps of the policy process
 - Assessment of demand vs. supply (resource potential);
 - Target setting (incl. sub-targets, priorities and arbitration between different areas);
 - Strategy formulation;
 - Policy implementation (incl. support programme management);
 - Policy monitoring & impact assessment;
- Different administrative levels of the policy processes (top-down vs. bottom-up)
 - EU;
 - National/federal;
 - Regional/provincial;
 - Local/municipal;
- Different policy perspectives (horizons):
 - Short-term (1-2 years);
 - Medium-term (2-10 years);
 - Long-term (> 10 years).

2. Rationale for an integrated bioenergy strategy approach

The following chart visualises the main steps of defining an integrated bioenergy strategy. The overall rationale applies classical methodologies applied in strategic management literature for companies to the policy context:



Step 1: External analysis (esp. EU targets & requirements)

In a first step, national policy-makers should come to a clear understanding of external factors that represent fixed parameters (either drivers or constraints) for the national bioenergy strategy. This external analysis especially concerns targets, directives and requirements defined on the EU level that need to be transposed by national legislations. Other important determinants for national bioenergy strategies are obviously political orientations in fields like security of energy supply, climate protection, economic progress & competitiveness or agriculture, but also overall renewable energy policies.

Step 2: Internal analysis (esp. biomass resource & demand assessment)

In a second step, national policy-makers must come to a clear assessment of the capabilities and constraints for biomass use in their country. This internal analysis mainly concerns the economic potential for mobilising domestic and/or importing biomass resources from other countries on one hand, and energy demand conditions on the other hand. In this analysis the arbitration between

- different biomass sectors (notably electricity and heat use),
- biomass and other renewable energy technologies, as well as
- energetic uses and other uses of biomass (notably food uses) should be taken into account.

This step is related to chapter C (assessment of national biomass resources) of this guideline, as well as to chapters 2, 4 and 5 of the EC template for NREAP.

Step 3: SWOT analysis (matching external requirements and internal capabilities)

To derive conclusions with regard to a feasible national bioenergy strategy, the external requirements (imposed by EU legislation & national energy political needs) on the one hand, and country-specific capabilities & constraints for biomass use on the other hand, should be matched. The result of this matching process should be a sound assessment of the national biomass potential, which should take into account both economic and sustainability criteria. The rationale of this task corresponds to a SWOT analysis, a very common strategic management method applied by companies in order to identify ways to match its internal strengths (S) and weaknesses (W) with the opportunities (O) and threats (T) of its external market and competitive environment.

This step is also mainly related to chapter C (assessment of national biomass resources) of this guideline, as well as to chapters 2, 4 and 5 of the EC template for NREAP.

Step 4: Target setting (incl. differentiated sectoral sub-targets)

Once the country-specific pre-requisites are clarified, differentiated national goals to be achieved by 2020, plus scenarios for realistic trajectories from 2010-2020 may be defined. Obviously these goals should be aligned to national RES targets defined on EU level. A sufficient differentiation of overall national targets requires the setting of priorities and definition of separate sub-targets for the bioenergy sector in general, as well as for the different biomass sectors (esp. electricity, heat & cooling, transport), bio technologies (solid biomass, biogas, bioliquids), perhaps even for separate regions.

This step is related to chapter D (formulation of national bioenergy targets, strategy and action plan) of this guideline, as well as to chapters 3 and 5 of the EC template for NREAP.

Step 5: Strategy formulation (incl. development of NREAP)

In a next step, a general roadmap linking the aforementioned national targets to a clear programme of activities to achieve them should be defined. This task mainly comprises the definition of a set of political measures to be implemented by the authorities and key actors in charge. Usually it makes sense to summarise this roadmap and programme of activities in one consistent document that can be

effectively communicated to all relevant target actors. It will be included in the national renewable energy action plan (NREAP) due by 30 June 2010. The national strategy must create a bioenergy policy and regulatory framework, which combines sufficient attractiveness and long-term security for market actors.

This step is also related to chapter D (formulation of national bioenergy targets, strategy and action plan) of this guideline, as well as to chapters 4 and 5 of the EC template for NREAP.

Step 6: Policy implementation (incl. management of policies in practice):

Even the most elaborate and well-thought strategy is worthless if it is not properly implemented in practice. A proper implementation of policies mainly concerns

- efficient structures and processes for the management of single policies and public support schemes;
- proportionate and efficient administrative processes for bioenergy projects;
- sufficient energy sector infrastructure to integrate bioenergy plants;
- effective information and integration of stakeholders, especially on local levels;
- sufficient technical regulations and quality standards, as well as qualification measures for key actors.

This step is related to chapter E (implementation of bioenergy policies in practice) of this guideline, as well as to chapter 4 of the EC template for NREAP.

Step 7: Policy monitoring & impact assessment (incl. feedback cycles)

Finally, an integrated national bioenergy strategy should foresee the establishment of effective measures to monitor and evaluate the actual impact of policies in reality. A main issue in this context is to ensure a sound statistical information basis on market & industry developments. Results from impact assessment must be fed back in the aforementioned policy processes (Steps 1-6).

This step is related to chapter F (monitoring of bioenergy markets & policies) of this guideline, as well as to chapter 5 of the EC template for NREAP.

In the following chapters general guidance is given to national policy-makers on how to apply these general steps in reality.

C. Guideline for the systematic assessment of national biomass resources

1. Key issues defined by the EC template for NREAP

The following key issues for national policy makers need to be addressed in this area:

- Assessment of national energy demand;
- Assessment of national biomass supply;
- Differentiation of national biomass supply by sectors and technologies;
- Compliance with sustainability criteria for the resource assessment for biofuels;
- Assessment of cross-country effects.

Assessment of national energy demand

Chapter 2 of the EC template defines requirements for member states to set out their estimates of gross final energy consumption of all types of energy, overall and for each sector in the period 2010-2020. Basically the target through 2020, as well as the trajectory 2010-2020, needs to be explained in detail. Two scenarios need to be distinguished, one “reference scenario” only taking into account energy efficiency measures adopted before 2009, the other “additional energy efficiency scenario” also measures planned from 2009 onwards. The forecast also needs to be differentiated by main sectors, so heating & cooling, electricity and transport (incl. aviation).

For detailed requirements, please refer to chapter 2 of the EC template.

Assessment of national biomass supply

Chapter 4.6 of the EC template defines requirements for member states to assess the supply of domestically available biomass resources for energetic use in 2006 in all relevant sectors (forestry, agriculture and fisheries and waste). The technical / physical potential (e.g. available land) must be delimited from the economically viable potential for biomass use in the respective country. Also plans to increase biomass availability (mobilisation of new sources) shall be outlined, taking into account other biomass users, notably agriculture and forest based sectors, including potential conflicts. Another issue to be addressed in this field are planned imports and exports of biomass resources. The envisaged national biomass supply balance in 2015 and 2020 needs to be presented in a differentiated way by the main sectors (forestry, agriculture and fisheries, and waste). Not only the overall targets for national biomass supply by 2020, but also the trajectory 2010-2020 to achieve them must be outlined in detail.

For detailed requirements please refer to chapter 4.6 of the EC template.

Differentiation of national biomass supply

Chapters 5.1. & 5.2. of the EC template explain how overall national RES targets 2020 & trajectories 2010-2020 are supposed to be differentiated by sectors and technologies, concretely:

- Detailed forecast of trajectory towards RES-E targets 2010-2020 (MW, GWh):
 - Differentiation by technologies: hydro, geothermal, PV/CSP, wind, tide/wave/ocean, solid biomass/biogas/bioliquids – share of CHP
- Detailed forecast of trajectory towards RES-H&E targets 2010-2020 (ktoe):
 - Differentiation by technologies: geothermal, solar thermal, solid biomass/biogas/bioliquids, GT heat pumps
- Detailed forecast of trajectory towards RES-T targets 2010-2020 (ktoe):
 - Differentiation by technologies: bioethanol, biodiesel, hydrogen, RES-E, others (biogas, etc.); including imports & exports.

For detailed requirements please refer to the chapters 5.1 & 5.2 of the EC template.

Compliance with sustainability criteria

Chapter 4.2.10 of the EC template defines requirements for explaining the national strategy regarding fulfilment of sustainability criteria for biofuels and bioliquids, as well as verification of compliance of the scheme according to the RES Directive. Implementation of these sustainability schemes in relevant legislations (zoning, land register, etc.), but also voluntary schemes applied in the country shall be outlined.

For detailed requirements please refer to chapter 4.2.10 of the EC template.

Assessment of cross-country effects

Chapter 4.7 of the EC templates defines the requirements to describe the expected use of cooperation mechanisms between member states and third countries, as well as the participation in joint projects to foster cross-country collaboration. For the assessment of national biomass potential it is obviously key/essential to consider international trade relations, either for importing missing or exporting excess resources. Also measures to enable an EU-wide monitoring of developments and leverage cross-country collaborations have to be addressed in this chapter of the NREAP.

For detailed requirements please refer to chapter 4.7 of the EC template.

2. Key conclusions from European Best Practice study and recommendations to national policy makers

In this chapter, the main findings from the European Best Practice report of the BAP Driver project on the aforementioned issues are recapitulated and translated into recommendations to national policy makers.

Assessment of the physical/technical potential of domestic biomass resources for energetic use in all relevant sectors (forestry, agriculture and fisheries, waste):

- All countries depend on detailed and reliable statistics on their domestic biomass resources, which do not only comprise traditional sectors like forestry and agriculture, but also others like biogenic waste and by-products. This assessment requires a sophisticated approach that integrates existing inventories and expert studies, as well as technical and economic assessment of resources.
- Obviously natural conditions (esp. availability of abundant biomass resources) and a strong historic tradition in bioenergy use (e.g. dominant forest/wood-processing industries) are a major driving force, independently from political support measures. Countries that decided for an early engagement in certain biomass sectors (e.g. promotion of district heating systems for buildings for environmental reasons to improve the air quality in the cities) are now harvesting pioneer advantages.

Calculation of the economic potential for energetic use of biomass resources, including mobilisation of new ones:

- In the long run, the optimisation of biological production beyond the European targets of 2020 is necessary (forest production, seaweed, etc.).
- A national biomass policy cannot be disconnected from an evaluation of the demand, so it must be included in the resource assessment and strategy definition processes. A resource planning cannot be only based on the offer (the logic of the potential) without paying attention to the demand side and to the solvability of this demand. The assessment of demand implies local strategies and policies.
- The EU policies for bioenergy promotion (as proclaimed by the EC) are often applicable in Central, Northern and Eastern regions where geographical and climatic conditions are usually favourable for biomass potential exploitation. Biomass policy for Southern or Mediterranean regions (including islands) should be carefully adapted in order to respect very different local conditions, and remove specific technical and non technical barriers. In Mediterranean countries like Greece the geographical and climatic conditions avoid the existence of rich

potential, especially in forest biomass and extensive development of energy agriculture. In addition, in these countries often the agricultural sector suffers from structural weaknesses and poor international competitiveness. Due to more favourable natural conditions, other renewables like wind, solar or small hydro, rank higher on the political agenda than biomass, which may sometimes lead to certain “cannibalism” between technologies in terms of political priorities. Southern European countries and islands must count more on imports, but nevertheless also there biomass policy must be integrated into the NREAP, usually with lower bioenergy targets and different policies than in Northern European countries.

- No doubt that the volatile prices of fossil fuels remain the principal driver for bioenergy, more powerful than any single promotional scheme.

Application of sustainability criteria for the assessment of national biomass potential

- So far, most national bioenergy strategies and/or single support schemes do not take into account any sustainability criteria on biomass production and use. Environmental, economic and social impacts as well as ecological and energetic balances are not sufficiently assessed. This ignorance may entail negative effects, for instance the rejection of bioenergy by the public (due to dust emission from wood boilers, rising food prices by liquid biofuels production, etc.). Exceptions are a few countries like the Netherlands that have various platforms working on sustainability certification.
- The variable equilibrium between offer and demand of food products and resulting variation of prices has an impact on the interest of farmers to invest or not in biomass production for energy uses. However, overall there are enough biomass resources to produce sufficient amounts of both food and non-food products alike, so it should be demonstrated that bioenergy offers more opportunities than threats to European farmers.
- Many market actors are very critical about the application of sustainability criteria as intended by the EU. A lack of acceptance and involvement may limit the actual effectiveness of certification schemes.
- Sustainability issues and related certification schemes are usually very complex to define and implement. It is also difficult to come to an agreement between the various stakeholders involved. Due to the large impact on the public support for biomass it is of vital importance to get to an adequate and viable testing framework for plants and/or producers, which applies clear sustainability criteria.

Consideration of cross-country effects for the assessment of national biomass potential (incl. import/export/international trade relations)

- Most experts stress the priority of using and mobilising domestic resources in comparison to biomass imports. Due to their low energy density, biomass resources should not travel over long distances but be used where they are produced, if possible. The distribution network of biomass must be adapted to this need and not the other way around. However, concentrated biomass might travel like biofuels and pellets, like in the future maybe pyrolysis oil, etc.
- However, for many countries the import of biomass is necessary to reach the EU targets. An important challenge for them is to ensure the sustainable character of imported biomass streams without restricting and burdening the sector too much with regulations. Certain countries like the Netherlands heavily depend on imports since they have little availability of biomass resources themselves. In these cases, when taking into account the whole chain production import could be more efficient than using local resources.
- Cross-country effects (both from imports and exports of biomass resources) are hardly considered in national assessment approaches. A concentration on the use and mobilisation of domestic resources only may turn out as very short-sighted in a global market environment.

3. Best practice examples from EU member states

For detailed best practice examples from EU member states please refer to pp. 10-13 of the [European Best Practice Report - Comparative assessment of national bioenergy strategies & biomass action plans in 12 EU countries, January 2009, 32 pages - executive summary](#). In the benchmark analysis of that report (chapter C) the bioenergy policies in 12 EU countries were assessed against the same set of performance criteria. For each criterion one outstanding country or national system was chosen as a benchmark for the assessment of the others. With regard to the assessment of national biomass resources the following benchmark countries were selected:

- *United Kingdom – Coherent biomass assessment approach;*
- *The Netherlands – Application of sustainability criteria;*
- *Finland – Consideration of cross-country effects.*

D. Guideline for the formulation of national bioenergy targets and bioenergy strategies integrated in NREAP

1. Key issues defined by the EC template for NREAP

The following key issues for national policy makers need to be addressed in this area:

- Setting of overall national targets 2020 & trajectories 2010-2020;
- Differentiation of targets & trajectories by different sectors and technologies;
- Definition of overall national strategy and/or concrete action plan to achieve targets;
- Selection and design of policy measures.

Setting of national targets 2020 & trajectories 2010-2020

Chapter 3 of the EC template defines requirements for presenting national RES targets 2020, as well as the trajectories 2010-2020 to reach them. The overall national RES target (share of RES in consumption mix %, ktoe) & trajectory has to be translated by main sectors, concretely

- Heating & cooling (RES-H&C);
- Electricity (RES-E);
- Transport (RES-T) – in alignment with binding 10% target defined on EU level.

Imports have to be added, exports deducted from the domestic balance. The application of flexibility measures (according to Art. 6-8, 11 of the RES Directive) and other co-operation measures with other countries should also be outlined. Optionally member states may provide a detailed assessment of their RES potential and/or regional / local RES targets as annex to the NREAP.

For detailed requirements please refer to chapter 3 of the EC template.

Differentiation of targets & trajectories by different sectors & technologies

Chapters 5.1 and 5.2 of the EC template provide requirements of a further differentiation of national targets & trajectories by final energy sectors (heating & cooling, electricity and transport), as well as bioenergy technologies (solid biomass, biogas, bioliquids & -fuels), concretely

- Detailed forecast of trajectory towards RES-E targets 2010-2020 (MW, GWh), including split by solid biomass, biogas, bioliquids as well as share of CHP;
- Detailed forecast of trajectory towards RES-H&E targets 2010-2020 (ktoe), including split by solid biomass, biogas, bioliquids;
- Detailed forecast of trajectory towards RES-T targets 2010-2020 (ktoe), including split by bioethanol, biodiesel, biogas, other.

For detailed requirements please refer to the chapters 5.1 & 5.2 of the EC template.

Definition of national strategy & action plan

Chapter 5.4 of the EC template addresses the description of the national process to define the national RES strategy and action plan to achieve the aforementioned targets. Concretely it should be outlined

- How regional and local authorities are involved in the preparation of the action plan;
- If there are plans to develop regional or local action strategies or plans;
- If a public consultation is carried out in preparation;
- Who are the main actors in charge of the process;
- If there is a formal monitoring system to measure the implementation.

For detailed requirements please refer to chapter 5.4 of the EC template.

Selection and design of policy measures

Chapters 4.1 - 4.5 of the EC template require member states to provide a comprehensive overview and description of policy measures applied to fulfill the requirements of the RES Directive, especially:

- Promotional support schemes in RES-E, RES-H&C and RES-T sectors, either regulatory, financial or “soft” measures;
- Administrative procedures & spatial planning measures;
- Building regulations;
- Technical quality standards and certification schemes (for installers);
- Information measures like awareness campaigns;
- Infrastructure measures, especially concerning electricity grids, biogas integration in national gas network or district heating & cooling infrastructure development.

For each major measure key data as well as appropriate performance criteria are requested to be included in the NREAP.

For detailed requirements please refer to the chapters 4.1 – 4.5 of the EC template.

2. Main conclusions from European Best Practice study and recommendations to national policy makers

In the following the main findings from the European Best Practice report of the BAP Driver project on the aforementioned issues are recapitulated and translated into recommendations to national policy makers on how to deal with them.

Setting of national targets 2020 & trajectories 2010-2020

- National biomass targets have to be defined according to the SMART (Specific, Measurable, Acceptable, Realistic, Timeframe) principle to be effective. Targets also have to be consistent with EU directives and Eurostat. A connection between separate targets for the three sectors (electricity, heating & cooling and transport), eventually even sub-sectors, must be ensured.
- There is a problem if countries do not adopt targets with specific numerical goals. In absence of a quantifiable target(s) for bioenergy, and left to pursue its own policy path, countries could run the risk entering an endless cycle of consultations, strategies, and action plans; all of which fail to commit resources or make the causal linkages between desired outcomes, the means by which they may be achieved, and the costs and benefits that they entail.
- It is difficult to define the share of biomass in renewable energy production through an integrated approach because the EU renewable directive is about a global percentage of renewables (the sum of solar, hydro, geothermal, wind and biomass production). Biomass objectives depend also on the other renewable objectives. The easiest approach seems to be to start from the share of biomass in each energy use sector? ;the integration is more an addition/an additional feature?.
- Sub-targets are also important. For example, it is not sufficient to set a target for heat as we have to look at the difference in end-use sectors (such as industries, households, services) because the needs, size, technologies and competing fossil fuels are different.
- Once targets are set, it has to be converted into installed capacity, and required investment, as well as into biomass needs.

Definition of national strategy & action plan

- Usually successful biomass policies in single sectors leverage the development in others, both on the political and the market level. Some policy measures (e.g. tax incentives) are working well in all sectors.
- The definition of a fully integrated bioenergy strategy, balancing all relevant areas, is extremely challenging. It is only feasible by a strong political push from the highest governmental level and must be ranked high on the political agenda.
- This also stresses the high benefits of sharing experiences and knowledge between different countries across Europe in this field.
- A very strong plus of successful policy frameworks is a strong and reliable commitment of governments to the promotion of renewable and bioenergy. This commitment must be manifested in ambitious long-term targets and programmes that are well communicated to relevant target groups. Only after a longer stable period of support policy, a high impact in terms of development of a critical mass of biomass installations will be noticed.

- The bioenergy sector is still in an early stage of market development, although the technologies and applications are already proven for a long time. Apart from short-term oriented measures for market stimulation, policy makers must not neglect the importance of research policies supporting the development of more efficient technologies, for instance biofuels with better CO₂ and energy balances and the more efficient conversion of biomass to electricity (gasification, pyrolysis, etc.).
- In various countries pending reforms of agricultural policies may push biomass use by creating new public awareness, spreading good practices and ensuring a more favourable environment for bioenergy investments. In the same way, new environmental policies and regulations may promote specific types of applications (biogas, olive mill wastes etc), provided that they are harmonised with energy policy & planning.
- Main driver for a major attention to bioenergy for electricity, transport fuels, and to a lesser extent heat, are changes of the domestic energy agenda of states. Many countries that have widely neglected renewables in the past, now show an increasing activity in bioenergy promotion, for instance by means of consultation processes, resource assessments and feasibility studies. Also sustainability is increasingly becoming an integral to the energy policy debate.
- A major barrier to market & industry development is the lack of a coherent national strategy. The lack of coherence is typically intensified if responsibilities for bioenergy are divided between several ministries. It is recommendable to achieve a country-wide consensus on national bioenergy targets between the different actors and political levels. On the other hand, such a process is complex to organise without slowing the formulation of a bioenergy strategy, so process efficiency must be taken into account as well.
- In many countries the proclaimed phasing out of nuclear energy is vague. Political statements are made and withdrawn again. This sometimes creates an uncertain climate for investments in bioenergy. However, in many countries no link between nuclear and bioenergy policy whatsoever is noticed.
- Reliable and consistent government policy, supported by government incentives and financial measures that ensure long-term security for investors have been the principal driver for bioenergy use in most countries.
- Often national bioenergy markets have a history of various subsequent development steps. In recent times growth is noted in several sectors: 1. CHP in district heating – producing bioelectricity and heat at the same time which gives a very efficient use of the raw material. 2. Bioelectricity production in the forest industry using biomass (mainly black liquor and other by-products). 3. Pellets use for heating of single homes and for other buildings. 4. Production, imports and use of biofuels in the transport sector.

- Ultimately, it is the implementation of policy, and its ability to stimulate investments that will determine the role bioenergy plays in the future energy system. Greater consideration of implementation at the same time as policy deliberation and formation is therefore an important area for improvement.
- Last but certainly not least, it is important “to walk what you talk”. Government and state institutions often do not really care about following up announcement by realities.
- Liberal, market-driven policy frameworks like in the UK tend to support only some low cost “technology winners”, while others are simply not competitive enough. The policy measures proposed are developed from a starting position, that significant additional funding could not be justified, and as a result, the measures proposed are dominated by low cost and no cost measures. The disadvantage in this approach is that, whilst a range of policy instruments are in place to support bioenergy, there is no quantifiable relationship between the measures that exist and the outcomes that they are expected to achieve. It is therefore impossible to say whether the current mechanisms are sufficient or need to be extended.
- Making the case for bioenergy specific policy measures or for ring fenced funding is sometimes difficult. In many countries bioenergy is only part of the renewable energy agenda, which in turn is a small component of energy policy. The argument that carbon savings should be achieved so as to minimise the cost to the tax payer is also laudable. Nevertheless, the absence of technology specific targets means that policy development for bioenergy is effectively constricted to pursuing least cost and incremental options.
- National NREAP task forces or steering committees require a clear status and mandate to create an impact in policy making process. Sometimes even the formation / selection process of these groups is unclear. The government must accept a leading role in the NREAP process and not leave it to expert groups “without teeth”. This is a particular challenge in bioenergy policies due to its multiple aspects and spread of responsibilities between the different authorities in charge of energy, agriculture or environment. This diversity makes it especially difficult to come to a concerted policy approach.

Selection and design of policy measures

- Each country needs strong long-term economic incentives in place for the different markets (heat, electricity and transport fuels). For market actors, even more important than sufficient attractiveness of support schemes for bioenergy investments is the security / reliability of framework conditions over a medium / longer term.
- The policy framework should be designed to give renewable energies a basic chance to expand on their own and increasingly become competitive and independent from public support. If the policy framework thus manages to create a playground for fair competition

between technologies, specific local market conditions will decide which ones are used best for different applications and segments.

- If warm climatic conditions lead to low heat demand profile, this discourages the development of bioheat applications and policies. In these countries, policies could be more effective only if cooling technologies were introduced. Despite good opportunities offered by the supporting tools, small CHP applications using agricultural and wood products (i.e. olive oil production chain, wood and agro-industry) have not been developed as expected. Specific policies are required in order to promote such applications in markets with limited heat markets. CHP units using biogas from livestock have not yet been developed in many countries.
- Unstable market conditions, for instance manifested by a lack of unity among political parties on bioenergy strategies, legal uncertainties in support schemes or the sudden change of policies, e.g. by correcting targets or changing support schemes, may have a very negative impact on the market. Discontinuing of subsidies for new projects results in distrust of market parties.
- Often fair competition between the fossil and renewable energies is still not ensured, since market prices do not take into account externalities. This divergence may be regulated by means of ecotaxes, from which biofuels are exempt and by imposing on fossil fuels and nuclear energy their full cost (long-term environmental costs, security cost) according to the Polluter Pays Principle.
- Call of tenders for electricity production plants from biomass have often not proven successful, especially if massive amounts of biomass has to travel from a region to another to produce electricity.
- A constructive bottom-up approach (driven by private entities) of electricity production to develop projects that take into account local context in term of environmental, economic and social aspects seems in most cases preferable to a top-down approach (centralised planning by public authorities).
- Bioenergy differs from all other RES as its processes depend on continuous supply of feedstock. In case of soaring prices for raw material, a flexible support scheme would be advantageous, although it entails higher insecurity for investors.
- In most countries, no sufficient support systems for renewable heating and cooling have yet been set up, therefore this sector is often lagging behind others (electricity, CHP, fuels) in growth. It is recommendable to keep the equilibrium between the three main biomass sectors.
- Large-scale industrial installations (e.g. large biomass fuelled CHP plants and/or district heating networks) require a completely different policy approach than the promotion of many small, decentralised plants (e.g. wood pellet boilers). The latter especially require strong regional promotion. Often the existence of an established large scale industry provides a well working infrastructure which may then result in a successful development of a small scale

industry as well. Unfortunately, in many countries the support for the small scale, local industry is not at the moment as well developed as for large-scale industry.

- Policies are successful if they are based on joint willingness of relevant local actors to develop support schemes simultaneously for production and use of biomass. These programmes may lead to high synergies and multiple positive effects such as high installation figures and intense creation of enterprises.
- Green certificate systems may have a considerable impact on national market development if they are sufficiently stable and ensure a minimum profitability for investors.
- Investment support schemes and fiscal incentives can be especially effective to trigger a market in an embryonic stage of development.
- Next to public support schemes, private financing mechanisms can be an important leverage for wider market growth. Examples are different contracting and/or ESCO (energy service companies) models where a professional contractor takes over all steps of project management on behalf of the end user, from initial planning via financing to installation and operation of the plant (including ongoing fuel supply). The user only pays for the energy supplied by the contractor. These financing models are certainly a good way to make bioenergy available for almost every one. They are especially viable for medium to large scale installations > 1 MW (e.g. heating / CHP system for bigger estates using wood chips or pellets).
- Investment subsidy programmes are often not sufficiently budgeted, so that their impact in terms of installations is limited right from the outset. However, they are generally a useful instrument to trigger a small market in an early development stage.
- In countries widely characterised by rural areas with structural problems, bioenergy policies may be effectively leveraged by general cohesion policies & financing tools in place on both national and EU level. The existing cohesion funds can be a strong asset for future biomass development, since their existence is ensured in the long run.
- Investment subsidies should usually provide well-balanced support for investments in biomass mobilisation, use (installations) and supply chains (infrastructures) alike.

Formulation of national renewable action plan (in line with EU requirements)

3. Best practice example(s) from EU member states

For detailed best practice examples from EU member states please refer to pp. 14-18 of the [European Best Practice Report - Comparative assessment of national bioenergy strategies & biomass action plans in 12 EU countries, January 2009, 32 pages - executive summary](#). In the benchmark analysis of that report (chapter C) the bioenergy policies in 12 EU countries were assessed against the same set of performance criteria. For each criterion one outstanding country or

national system was chosen as a benchmark for the assessment of the others. With regard to the formulation of national bioenergy strategies and biomass action plans the following benchmark countries were selected:

- *France – Integrated & balanced national bioenergy strategy;*
- *Austria – Setting of targets & priorities;*
- *Romania – Status & quality of national biomass action plans*
- *Germany – Attractiveness & consistency of national policy frameworks & support schemes for bioenergy promotion.*

E. Guideline for the effective implementation of national bioenergy policies

1. Key issues defined by the EC template for NREAP

The following key issues for national policy makers need to be addressed in this area:

- Streamlining of administrative processes;
- Strengthening the energy sector infrastructure & grids;
- Information and integration of relevant stakeholders in policy processes;
- Technical specifications, quality standards and qualification measures for key actors.

Streamlining of administrative processes

Chapters 4.2.1 and 4.2.3 of the EC template require the description measures to optimise administrative processes for licensing, grid connection, certification and/or participation in support schemes. Also measures in building and spatial planning law to facilitate RES projects are considered relevant for the NREAP.

- List legislations, authorities, revision of steps, regional / local measures;
- Describe main administrative barriers to be overcome;
- Describe administrative structures (authorities) & co-ordination between them;
- Describe information / technical support / qualification measures (for applicants, but also guidance & trainings for local authorities);
- Describe differentiation of procedures, notably for diverse RES technologies and system sizes, especially simplifications for small systems;
- Costs / fees for processes.

For detailed requirements please refer to the chapters 4.2.1 & 4.2.3 of the EC template.

Strengthening the energy sector infrastructure & grids;

Chapters 4.2.6 – 4.2.9 of the EC template concern measures regarding the energy sector infrastructure required to integrate bioenergy installations as intended, concretely

- Electricity infrastructure development: measures concerning issues like grid extension & adaptation, smart / intelligent grids, information technology, storage solutions, priority grid access, but also addressing of main bottlenecks for RES plants (cost sharing, non-discrimination of independent power producers, etc.);
- Electricity network operation: issues like grid adaptation & priority grid access and use (to foster decentralized generation), electricity market operation & trading, e-sector regulation, IPP integration in the energy market, cost & tariffs, etc.

- Biogas integration in national gas network;
- District heating & cooling infrastructure development.

For detailed requirements please refer to the chapters 4.2.6 – 4.2.9 of the EC template.

Information and integration of relevant stakeholders in policy processes:

Chapter 4.2.4 of the EC template concerns the effective activation and involvement of relevant target groups in the country, especially awareness raising and information campaigns. The most relevant measures in this field shall be described in the NREAP, including

- underlying legislations;
- main authorities (regional/local) involved;
- guidelines & publications provided.

For detailed requirements please refer to the chapter 4.2.4 of the EC template.

Technical specifications, quality standards and qualification measures for key actors

Chapter 4.2.2 of the EC template requires the clarification of technical specifications and implementation of quality standards for installations. Main focus is on quality standards required to benefit from public support schemes. Chapter 4.2.5 concerns qualification measures of key actors in the market. Again the most relevant measures in this field shall be described in the NREAP, including

- underlying legislations;
- main authorities (regional/local) involved;
- guidelines & publications provided.

For detailed requirements please refer to 4.2.2 & 4.2.5 of the EC template.

2. Main conclusions from European Best Practice study and recommendations to national policy makers

In this chapter, the main findings from the European Best Practice report of the BAP Driver project on the aforementioned issues are recapitulated and translated into recommendations to national policy makers on how to deal with them.

Ensuring of the cost-effectiveness of policies (incl. efficient management of support schemes)

- National budgets for bioenergy promotion must be well regionalised, in order to promote energy applications in agricultural and rural areas. The regionalisation is no major issue in small countries where processes may well be organised on the federal level.
- The *high volatility* prices of fossil fuels (oil, gas, coal, etc.) may stimulate both consumers and industry actors to risk the use of new technologies including biomass. Especially bioheat technologies will finally become more and more financially attractive as oil prices rise. Increasing energy prices are also expected to stimulate interest at the local level.
- Bioenergy markets may suffer if politicians try to regulate and support too many aspects in detail. For instance, this may lead to “stop-and-go-effects” that are always harmful to the industry. Regularly the budgets reserved for investment subsidies are too small. In addition, these programmes are mostly characterised by “stop & go” effects. Other forms of subsidies than such budget-linked programmes may be more effective, for instance feed-in-tariff systems (which however are no effective support scheme for the bioheat market).
- “Oversubsidisation” by means of too attractive schemes may trigger a short period of a “bull run”, which causes an immature industry problem supplying the demand. After this period, in which many investors may already be discouraged, the public budgets may run out and the market collapse. Many producers are suddenly unable to sell their equipment and pay off their investments. As a result, it is better to rely on long-term economic incentives and let the market handle the supply, instead of introducing lots of different detailed subsidies.
- Policies should avoid subsidising inefficient technologies, for instance bioelectricity production where the excess heat is not used for district heating or other purposes. Unprofitable bioenergy solutions can be the result of subsidies that make these kinds of investments possible. At the end of the day, all technologies must be based on clear economics, besides being environmentally sound.
- Efficient energy policy must be based on demand (rather than just potential). The "integration" of the policy comes from the link between resource and solvent demand.

Streamlining of administrative processes for licensing, grid connection and/or participation in support schemes

- A well-defined cooperation framework between administrative levels on federal and regional levels seems beneficial. This framework should align efforts for bioenergy promotion and regulate technical and financial issues related to them.
- The complexity and inadequate funding of support schemes might build barriers for implementation.

- The high initial investment cost of bioenergy plants and the increasing opportunity cost of land are a major barrier. The likely result is the reduced capacities of potential investors. Too high cost of renewable energies can inhibit their deployment completely.
- Also long and costly administrative procedures for licensing are a major market barrier. Especially for small-scale installations the common procedures for energy and/or industrial installations must be streamlined (more transparency, shorter lead times, less formal hassle for small plants, non-discriminatory cost, etc.). This often also applies for subsidy schemes, which in many countries are organised in a too bureaucratic way.
- Long and costly grid access is another severe market barrier. A clear legal framework accelerates the access procedures significantly. The costs of necessary grid expansions should not be carried by the plant operator alone. In some countries like Germany a clear legal framework has solved the grid access issue in a fully satisfactory way.
- Another barrier is inappropriately high permitting / licensing requirements before a project can start. Different authorities from different levels (municipal, district, regional, federal) and different legislative fields (energy, environment, waste, land-use, etc.) are involved in this process. Further streamlining and transparent-making of these procedures is important for the renewable energy sector. This is especially true in two issues: The first issue is the question how to follow the philosophy of the “Ladder of Lansink”, i.e. a philosophy how to handle waste streams by assuring that certain steps are taken in the following order: prevention of waste, recycling of waste, incineration of waste, landfill of waste) for biomass waste streams (also in relation with the imported biomass streams and energy crops). The second issue is how to streamline the different emission levels for bio-energy installations.

Information and integration of relevant stakeholders in policy processes

- Most countries with strong bioenergy deployment are characterised by a strong support by both policy-makers and the general public. Broad acceptance is the pre-requisite for ensuring the integration of sustainability principles in developing policies and support programmes. Countries should therefore strive to achieve active cooperation and mutual supportiveness between different stakeholders (government institutions, companies and consumers).
- More than in any other sectors, bioenergy policies must be carried out at local levels; thus, an effective regionalisation of policy processes is important. A pure top down approach initiated by federal government does not achieve the necessary levels of acceptance and implementation locally.
- An effective integration of stakeholders in policy processes is a key success factor. Therefore, national bioenergy strategies must be better integrated between different policy sectors, but especially along the different steps of the supply chain (links between resource production, conversion, supply and use).

- The close involvement of key actors is important in bioenergy, where usually a wide network of players is involved in the supply chain. Especially “critical” groups, such as agricultural associations, agro-food industry, farmers or livestock unit owners need to be inside the information and planning cycles for planning and implementation of policies. The importance of good information cannot be stressed enough – it is required to get people to make the right decisions.
- The impact of NREAP processes depends on the effective involvement of all major stakeholders (government, energy and waste companies, banks and environmental organisations), for instance in the form of a NREAP steering committee with and task groups. Such structures foster the sharing of information and common understanding between partial interest groups.
- Measures for awareness creation and education among all stakeholders, aligned to/with? adequate (financial and administrative) support measures, are of great importance.
- Successfully executed biomass references (demonstration projects) especially in the public sector are very important to show people how it can be done and how it can pay off. Bioenergy is more complex than other renewables like wind and solar. Communicating the benefits is a major challenge.
- Negative promotion has much greater impact than positive one. As a result, promotional measures for bioenergy should be very carefully planned. Only sound information should be made public to avoid negative public perception, for instance in the context of “food vs. fuel” and land use change debates.
- Promotion has no positive impact if it is not leveraged by existing regulations and control measures, and only if relevant partial interests give their support. If all stakeholders and actors are not involved in the starting phases of a project, this may cause grave implementation problems.
- In densely populated regions the general public has often reservations about several types of bioenergy projects in their neighbourhood. The NIMBY (Not In My Back Yard) syndrome is a problem a lot of new installations have to deal with. Sometimes projects even have to be stopped because of opposition actions taken by local action committees. Awareness rising and better communication with the local public is an important action point to the future on different levels.
- If policies are not properly regionalised, projects may become “hostage” of the local politics, which may result in poor acceptance among local people and bad publicity. Bad practice is also unbalanced media reporting in terms of “the only good news is bad news”. Almost all bad experience suffered from publicity both on TV and print media, on the other hand only few good examples are made public, not to mention disseminating positive information on the use of biomass in general.

- The empowerment of the administrative side is not sufficient, but it is necessary to activate other key actors such as professionals and NGOs, as well.

Implementation of quality standards and qualification key actors

- It is important to enable the development of professional supply infrastructures on local levels, because they are the “transmission belt” for any successful policy measure. These infrastructures concern the local organisation for biomass production and supply. Especially required are engineering capabilities in sufficient number, networks of skilled installers as well as quality standards reassuring investors.
- In many countries minimum technical standards existing on EU or international level (e.g. EN, IEC norms) are simply applied nationally. Only in few questions national authorities have defined even more demanding standards.
- Most countries have training and certification schemes for professionals that are mostly organised by the industry itself or independent private organisations. The state or public educational institutions (like universities or professional academies) are usually not involved in launching such initiatives – bioenergy installations are not yet part of conventional professional education programmes.
- Only few countries are actively promoting the installation of new qualification regimes. For example Finland has built up a qualification program for heat entrepreneurs in recent years.

3. Best practice example(s) from EU member states

For detailed best practice examples from EU member states please refer to pp. 19-23 of the [European Best Practice Report - Comparative assessment of national bioenergy strategies & biomass action plans in 12 EU countries, 32 pages - executive summary](#). In the benchmark analysis of that report (chapter C) the bioenergy policies in 12 EU countries were assessed against the same set of performance criteria. For each criterion one outstanding country or national system was chosen as a benchmark for the assessment of the others. With regard to the implementation of national bioenergy policies the following benchmark countries were selected:

- *Sweden – Policy impact on actual market & industry development;*
- *Belgium – Cost-effectiveness of bioenergy strategy & support schemes;*
- *Germany – Efficiency of administrative procedures;*
- *Sweden – Information & integration of stakeholders;*
- *Austria – Quality standards & qualification of key actors.*

F. Guideline for the monitoring of national bioenergy markets and policies

1. Key issues defined by the EC template for NREAP

The following key issues for national policy makers were identified in this area:

- Market monitoring;
- Policy performance measurement & impact assessment;
- Sustainability schemes for biofuels.

Market monitoring

Chapters 5.1 & 5.2 of the EC template refer to the uniform way of measuring the planned deployment of RES technologies 2010-2020 by member states. Detailed tables for presenting the planned trajectories are provided:

- For the electricity sector, both the expected (accumulated) installed capacity (in MW) and yearly production (GWh) should be indicated by technology. For biomass, a distinction should be made between solid, gaseous and liquid biomass for electricity;
- For the heating & cooling sector, estimates of both installed capacity and production should be given for biomass technologies, with a breakdown for solid, gaseous and liquid biomass. The contribution from district heating plants should also be estimated;
- For the transport sector, the contribution from different technologies to the overall target should be indicated for ordinary bio fuels (both bioethanol and biodiesel), biofuels from wastes and residues, biofuels from non-food cellulosic or from lingo-cellulosic material or biogas.

For detailed requirements please refer the chapters 5.1 & 5.2 of the EC template.

Policy performance measurement & impact assessment

Chapter 5.3 of the EC template refers to impact assessment of chosen policies. For each main measure a cost-benefit analysis is requested, outlining the following aspects:

- Expected renewable energy use (ktoe);
- Expected cost (in €);
- Expected GHG reduction by gas (t/year);
- Expected job creation.

For detailed requirements please refer to chapter 5.3 of the EC template.

Sustainability schemes for biofuels

Chapter 4.2.10 of the EC template defines requirements for national sustainability schemes for biofuels according to the RES Directive (Art. 17, 3-5). Member states are requested to describe especially

- How sustainability criteria are implemented at national level;
- How bio fuels are counted towards national RES targets and obligations;
- Which authorities will monitor the fulfilment of obligations;
- Which legislations will verify compliance with the RES Directive (Art. 17, 3-5)
- If there are voluntary sustainability schemes.

For detailed requirements please refer to chapter 4.2.10 of the EC template.

2. Main conclusions from European Best Practice study and recommendations to national policy-makers

In this chapter, the main findings from the European Best Practice report of the BAP Driver project on the aforementioned issues are recapitulated and translated into recommendations to national policy makers on how to deal with them.

Implementation of effective measures for market & industry monitoring (in line with EU requirements)

- Data used for assessing national biomass resources, defining bioenergy strategies and implementation of bioenergy policies must be better harmonised between different policy fields (e.g. agriculture, energy and environment), but also on EU level in order to have a sound basis for political decisions. Also certification schemes (for recognition of sustainability) and – to a certain extent - permitting procedures must be harmonised EU-wide, rather than creating singular systems in each single market. So far usually bioenergy policies have been developed concurrently on national and EU levels. There appears to have been limited interaction between the two policy processes in many countries.
- In most countries there is no clear monitoring approach for all types of support programmes. Monitoring should be based on a consistent, balanced and long-term approach instead of single one-time measures. It should therefore
 - comprise constant market, industry, system and policy monitoring
 - address all relevant groups involved in the political decision-making process alike
 - balance expected benefits and costs
 - make use of existing data sources to minimize costs

- provide additional market related information (e.g. employment numbers, macro-economic costs, impact on grid infrastructure, environmental impact etc.)
- Setting up a national monitoring system should be in accordance with the minimum requirements of a possible European-wide monitoring. In addition, data harmonisation and possible synergies with the data collection activities such as Eurostat should be ensured.
- A risk factor is the complexity of effective monitoring. High-flying concepts may not work in practice if not properly supported and implemented by key actors, also on regional / local level.

Implementation of effective measures for policy performance monitoring (in line with EU requirements)

- Also monitoring the results of programmes is a very important tool to monitor the effectiveness of the bioenergy promotion. In most cases, not enough attention is given to policy monitoring by now.
- Monitoring systems should be based on a research design that precisely defines
 - Target groups
 - Key data
 - Data collection methods and sources
 - Incentives for data sources to deliver data
 - Data management and interpretation
 - Costs and benefits
- Feed-in-tariff or quota systems should be complemented by a national plant register in which all grid-connected installations (installed capacity, electricity produced, tariffs received) are captured. Data should directly be fed into a central database. Both plant and grid operators should be obliged to deliver data for the register. Data communication should be simple, if possible by means of an online interface.
- Effective monitoring (and structuring) of relevant information and knowledge is very useful for market development, as well as the exchange about best practices between stakeholders.
- Ambitious policies require a sound & accurate information basis, so a comprehensive market monitoring system is crucial. Rather than a patchwork of one-off measures, a well-structured, long-term approach should be defined.
- In a? few countries, a system of clear indicators has been set up, which offers a solid base for monitoring the realisation of policies and consequently enables wide discussions on the realisation of targets or necessary changes.
- In political realities, it is often fairly clear if a certain policy is effective (= has an impact, effect), but not if it is also efficient (= cost vs. benefits relationship).

- It makes sense to define clear categories of impacts like environmental, economic and/or social impact to make “high-performing policies” measurable.

Implementation of sustainability guarantee measures (in line with EU requirements)

- Some industry actors consider too stringent certification rules and sustainability criteria a big risk, as they will hamper development of fledgling bioenergy industries. According to them, it is impossible to give “total guarantees” on all the different kinds of concerns expressed in the public debate. They believe it is better to let the industry develop and undertake parallel environmental studies and analyse development on the market. However, the risk of this strategy is that it causes bad publicity in some cases, resulting in a lack of public support.
- It is very difficult to achieve commitment from all stakeholders on the definition and control of sustainability criteria, and the definition of corresponding monitoring systems. As a result, the aim of the EU directive to ensure that national bioenergy policy monitoring will bring sufficient info for reporting to the EC is widely uncertain.
- Many monitoring activities do not measure the impact of biomass policies on job creation, land use, CO2 reduction, food prices etc. This is an additional area to be covered by sound monitoring policy.

3. Best practice example(s) from EU member states

For detailed best practice examples from EU member states please refer to pp. 23-24 of the [European Best Practice Report - Comparative assessment of national bioenergy strategies & biomass action plans in 12 EU countries - Best Practice Guidelines, January 2009, 32 pages - executive summary](#). In the benchmark analysis of that report (chapter C) the bioenergy policies in 12 EU countries were assessed against the same set of performance criteria. For each criterion one outstanding country or national system was chosen as a benchmark for the assessment of the others. With regard to the implementation of national bioenergy policies the following benchmark countries were selected:

- *The Netherlands – Effective approach to market monitoring;*
- *France – Effective approach to policy performance measurement;*
- *Belgium – Effective approach to sustainability guarantee.*

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