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GUIDELINES ON ENERGY CONSERVATION IN EUROPE

Addendum to

PROPOSAL FOR A POLICY STATEMENT ON ENERGY EFFICIENCY

submitted by

the ECE Committee on Environmental Policy
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A. Background to the Energy Conservation Initiative

The Committee on Environmental Policy of the United Nations Economic Commission for Europe (UN/ECE) decided in January 1997 to launch a comprehensive initiative on energy conservation. The Energy Conservation Initiative has involved governmentally designated experts from a large number

of countries, the European Commission, and international organizations. Experts have cooperated to produce a considerable amount of information on energy efficiency case studies and updated information on energy efficiency policies. International organizations and some national experts, notably from the Governments of Denmark, Norway, Switzerland, Germany and the Russian Federation and from the European Commission, have made a particular effort to contribute.

The objective of the exercise has been to strengthen the pan-European cooperation on energy efficiency in line with the UN/ECE/Committee's decision. Consequently, the following supporting documents have been prepared:

- Background papers (in the form of a report on energy efficiency, and a national study of the Russian Federation);
- Case studies (including more than 40 implemented and evaluated cases);
- Country profiles (in support of further monitoring associated with the Protocol on Energy Efficiency and Related Environmental Aspects and covering more than 50 countries).

These guidelines constitute a menu of measures for developing policies and strategies in energy efficiency. They make special reference to the international commitments already in place and are intended to assist further energy efficiency initiatives at the national level and strengthen international cooperation.

PREAMBLE

B. Political commitment

Energy services are essential to economic and social development and to improving quality of life. Securing a sufficient supply of energy and access to more energy services are therefore basic requirements in all countries. To achieve this, Governments and other parties should cooperate, where possible, in the area of energy resources.

The extensive use of energy presents a severe challenge to the environment. Fossil fuel combustion is responsible for the majority of greenhouse gas emissions and most local and transboundary air pollution, as well as acidification and water pollution, and contributes to land degradation from mining, drilling and waste. Nuclear energy represents a potential for hazards, waste management tasks, etc., and this should also be recognized.

The necessity of energy efficiency policies as a link between environmental and energy policies was stressed in the Sofia Declaration of the 1995 Ministerial Conference "Environment for Europe", where Governments agreed to take measures to achieve a higher level of energy efficiency by 2010, and in several international statements and conventions, including:

- UN/ECE Convention on Long-range Transboundary Air Pollution and its protocols;
- IEA Shared Goals;
- Energy Charter Treaty and the Protocol on Energy Efficiency and Related Environmental Aspects;
- Kyoto Protocol to the United Nations Framework Convention on Climate Change;
- Agenda 21 and UNGASS 1997.

The Energy Charter Treaty and the Protocol on Energy Efficiency and Related Environmental Aspects, the Kyoto Protocol, and the UN/ECE Convention on Long-range Transboundary Air Pollution with its protocols, comprise binding obligations on the countries that have ratified them and refer to energy efficiency policies.

Improving energy efficiency is one way in which Parties to the Kyoto Protocol or the UN/ECE Convention on Long-range Transboundary Air Pollution and its protocols can meet their commitments. International commitments have been followed by vigorous efforts - nationally, bilaterally and internationally. The Energy Conservation Initiative took advantage of these efforts.

C. Benefits of energy efficiency policies

Benefits to economy, environment, employment and security of supply

Improved energy efficiency can help ensure that limited resources will be used more efficiently. This will yield indispensable economic, environmental and energy security benefits. Efficient use of energy and the use of cleaner fuels and renewables may, if cost-effective, in most cases reduce and/or substitute the use of fossil fuels, thereby reducing environmental degradation, slowing down the rate of climate change, and improving economic performance, especially in economies in transition. The implementation of energy efficiency policies provides a chance to create new jobs and reduce unemployment by developing new markets for energy services.

A recent estimate indicates that potential energy efficiency improvements of 20-30 per cent beyond the historical trends may be possible within the next two or three decades. The potential may be higher in countries with economies in transition.

Energy efficiency is a driving force in economic development and thus of substantial importance to competitiveness in the international market. In many countries energy is a substantial part of the economy. In the economies in transition energy often represents one third, or even more, of gross national product at world market prices . An assessment in the Russian Federation indicates that for every three per cent of saved energy, national income may improve by one percent. This shows that important macroeconomic benefits are obtainable.

In countries with substantial indigenous energy resources, energy efficiency will increase export opportunities and income. In net energy importing countries, the import bill will decrease and security of energy supply improve.

In addition, enhanced energy efficiency will delay the need for new energy supply capacity. The result may be overall economic savings for consumers, industry and governments and a shift in investments from supply- to demand-side.

A 30 per cent reduction in energy consumption in industrial countries would correspond to an annual reduction of approximately 6,000 Mt carbon dioxide and become one of the major contributors in our efforts to challenge climate change. Simultaneously, emissions of sulphur dioxide, nitrogen oxides and other air pollutants would fall.

Consequently, energy-efficiency policies may promote sustainable development in the industrial countries. Energy efficiency policies can create a 'win-win' situation, in which economic potentials are realized while leading to environmental improvements and stretching the world's resources. In this context it is important that the industrial countries set an example.

The activities to implement these policies need in many cases to be further organized. This necessitates new dedicated national efforts based on international cooperation.

International, national and regional opportunities

While many efforts have been made to improve the efficiency of energy use, significant cost-effective - and even no-cost or low-cost - opportunities still exist. This is particularly true for countries with economies in transition.

Improved energy efficiency is widely understood to be an important element of energy policy for several reasons:

- Firstly, since the oil crises struck the OECD countries in 1973 and 1979, it has been obvious that energy problems cannot be solved by simply increasing supply;
- Secondly, uncontrolled energy use has led to many of the severe environmental problems we face today;
- Thirdly, as illustrated by the economies in transition, ample supply of energy does not secure a satisfying level of economic development if energy is used inefficiently for domestic purposes.

Energy efficiency policies and the role of government will vary among countries due to differences in traditions, institutions, climatic and geographic conditions, energy resource endowment, existing infrastructures, end-use patterns, economic and political setting, and so on.

There is no single formula for an energy efficiency strategy but there are important principles and approaches that could be appropriate to all countries. It is also highly beneficial to learn from the experience of other countries even if it is not directly transferable. One basic motivation behind the Energy Conservation Initiative has been to provide decision makers with policy instruments and mechanisms in international cooperation.

An important aspect is the opportunity to prioritize the implementation of energy efficiency measures in economies in transition and in countries where there have been limited incentives for energy conservation in order to maximize cost-effectiveness as well as to achieve the desired energy and environment objectives. The transfer of technology from more developed market economies could yield environmental benefits in a cost-effective way. These opportunities have gained a prominent role in the Kyoto Protocol and should be further developed.

As a decisive basis for improving energy efficiency it is necessary to liberalize energy markets and thus mobilize the initiative of enterprises and consumers for a more efficient use of energy. In economies in transition it is important to establish a reliable framework for energy markets and investments to accelerate the modernization of the entire energy economy.

D. Implementing energy efficiency policies

There are many reasons why the potential for energy efficiency improvements is not being fully achieved. There are many barriers in the energy markets which hinder the realization of energy efficiency potentials. The role of national governments is to identify these barriers, and to design and implement the right policy framework and programmes on energy efficiency. The private sector and actors on the local and decentralized level also have a role in identifying and overcoming barriers to greater energy efficiency. Countries are encouraged to cooperate internationally to share experiences and lessons learned.

Binding obligations for Parties to carry out energy efficiency policies are stated in the Energy Charter Treaty with its Protocol on Energy Efficiency and Related Environmental Aspects. According to the Kyoto Protocol, and the UN/ECE Convention on Long-range Transboundary Air Pollution and its protocols, Parties to these agreements may choose to employ energy efficiency policies and measures to fulfil their obligations.

The Kyoto Protocol sets targets for reducing greenhouse gas emissions by 2008-2012 in countries which are listed in Annex I to the Convention on Climate Change. These targets imply a five per cent reduction compared to the 1990 level of emissions in those countries as a whole. The reduction obligation differs from country to country, reflecting for instance different starting points and options. The Protocol emphasizes however the need to speed up energy efficiency actions in all countries, especially in economies in transition.

The Kyoto Protocol also includes a provision requiring Annex I Parties to have a national monitoring system for greenhouse gases in place no later than one year prior to the start of the first commitment period, i.e. in 2007, supervised by the Convention's Secretariat. When the design of further instruments is completed, verification mechanisms will be added.

The Energy Charter Treaty Protocol on Energy Efficiency and Related Environmental Aspects in April 1998 became legally binding on those countries that have ratified it. Other signatory countries have declared their intention to implement the Charter's provisions on a voluntary basis. The

implementation is monitored by the Energy Charter Conference, which has entrusted the Energy Charter Secretariat to supervise, monitor and assist in the implementation process.

It is expected that the Energy Charter Conference will carry out the implementation work for the Protocol on Energy Efficiency and Related Environmental Aspects in close cooperation with relevant institutions and international organizations and taking account of their expertise 1/. The procedures to facilitate the implementation of the Protocol should be set before October 1998. The Energy Conservation Initiative helped to pave the way for this process.

The Protocol to the 1979 ECE Convention on Long-range Transboundary Air Pollution on Further Reduction of Sulphur Emissions (1994, Oslo) allows Parties, among other measures, to make use of energy efficiency measures to achieve emission reduction targets. Increased energy efficiency is expected to be among the implementation instruments for a new protocol on nitrogen oxides and related substances which is under negotiation. The Executive Body for the Convention has also decided to consider cost-effective reductions of sulphur in the preparations for this multi-pollutant multi-effect protocol, since measures on sulphur that go beyond the Oslo obligations may introduce positive trade-offs in certain cases. The energy sector will once again, together with the transport sector, be the main target.

There is an urgent need to investigate and develop monitoring, modelling, and reviewing principles. Using the network and experience gained in the areas of energy and environment created through the Energy Conservation Initiative may strengthen international cooperation on energy efficiency and help inform ongoing work under relevant international agreements.

GUIDELINES

E. Guidelines for energy efficiency policies

The basic obligations to develop and implement national energy efficiency policies are described in the Protocol on Energy Efficiency and Related Environmental Aspects to the Energy Charter Treaty. New instruments and priorities agreed upon in the Kyoto Protocol will - when developed - affect and complement these principles. Some of the measures are of an international nature. The Energy Conservation Initiative has revealed a number of priorities and actions to be considered in future work on energy efficiency policies both nationally and internationally. These considerations add to the work already done nationally and internationally in the UN/ECE including its Energy Efficiency 2000 Project, the International Energy Agency (IEA), the United Nations Development Programme (UNDP), the
United Nations Environment Programme (UNEP) and the United Nations Framework Convention on Climate Change (UN/FCC).

1/ Several countries, e.g. all EU member States, have started monitoring and implementation procedures. This experience should be used. IEA and other institutions possess relevant expertise.

These guidelines may be divided into five categories:

- Strategic;
- Organizational;
- Economic;
- Regulatory;
- Technological.

Strategies for energy efficiency

Energy efficiency policies should, when appropriate, be based on a comprehensive strategic framework. In developing these policies, attention should be paid to the provisions of the Protocol on Energy Efficiency and Related Environmental Aspects, which requires its Parties to develop transparent energy efficiency strategies. Country profiles produced under the Energy Conservation Initiative indicate that few countries have established and started to implement long-term energy efficiency policies and programmes.

It is recommended that:

1. Governments should develop their energy efficiency policies. This may be facilitated by the implementation of the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects. Those States that have not yet ratified it, are invited to do so.

2. Governments should emphasize the link between energy efficiency and environment by integrating energy efficiency and sustainable development.

3. Energy efficiency policies should be integrated in government policies and form part of other relevant policies as a long-term stable function, also supported on an international level, emphasizing indicative targets in environment, economy, and security of supply, and also reflecting market transformation issues and social and employment aspects. This policy-making is the joint responsibility of the government.

4. Bilateral and international organizations should assist governments in conducting strategic work by identifying energy-efficiency actions and projects at national and international levels.

5. Instruments for energy efficiency policies should be developed and made compatible through international cooperation. These instruments should include a number of activities such as data collection, indicator development and impact analyses, guidance in setting operational objectives as partial or sectoral targets or yardsticks, such as voluntary commitments by

industry, best practices and codes of conduct, monitoring, evaluation and follow-up. It is important to take necessary practical actions to ensure that energy-efficiency measures are linked to environmental targets.

6. A 'bottom-up' approach should be adopted in analysing energy efficiency options to ensure that demand-side reflections and local and decentralized aspects are given high priority.

7. The overall cost-effectiveness of energy-efficiency measures should be carefully considered, including the health aspects.

Capacity building and organization

Implementation of energy efficiency policies depends on strong actors with sufficient awareness, knowledge and experience. Thus, long-term energy efficiency policies and programmes imply the involvement of the private sector, industry, municipalities, local cooperatives, housing associations, NGOs and consumers in a long-term process. Setting a dynamic 'playing field' in the right market conditions is essential. Institutional strengthening at all levels is necessary to support the energy efficiency work. An important issue is to support consumers' efforts to raise awareness about energy savings.

It is recommended:

8. That partnerships should be established between actors at all levels, nationally and internationally, to exchange information and implement energy-efficiency policies and programmes with reference to economic, environmental and other objectives and generate a fundamental market transformation to achieve the full potential of energy efficiency.

9. That functioning market conditions should be created and improved, including an appropriate legal framework to give enterprises and private consumers incentives to raise energy efficiency.

10. That initiatives to increase end-user awareness on energy usage should be promoted. Increased awareness may be generated by campaigns, information, marketing, education, etc. Strategies for building human capacity need to take their point of departure from consumers' living conditions, resources and ability to save energy. In the implementation of innovative projects, the involvement of groups of 'lead users' may be useful.

11. That local and decentralised initiatives in which all the different actors are brought together and take an active part in implementing energy efficiency measures, i.e. local decision makers, utilities, small and medium-scale enterprises, industry, households, the public sector, etc, should be promoted. It is essential to pursue public involvement in local decisions on energy

efficiency, including capacity building, access to transparent information, and participation in decision-making processes, to achieve successful and popular programmes.

12. That cooperation and the exchange of ideas between experts, agencies, municipalities and other organizations should continue and be encouraged. This could be done, for example, by launching individual follow-up projects to the Energy Charter and Kyoto protocols, cf. the biannual cross-disciplinary conferences of the European Council for an Energy Efficient Economy Summer Study or the 'energy cities' cooperation throughout Europe, or by starting local Agenda 21 programmes involving energy efficiency activities in the residential, industrial or municipal sector. Also, the ECE Energy Efficiency 2000 Project, the European Union twinning programme, networking, including use of electronic media, between similar parties in different countries will be of great value. A political dialogue among countries should also take place as mentioned in the Energy Charter Treaty in order to stimulate cooperation.

13. That energy efficiency policies in the design of funds should be dynamic. Revolving funds could be useful in bi- and multilateral assistance. By applying such rational assessment techniques as, for instance, global criteria (in a 'clearing house' for projects and energy efficiency investments), joint implementation methodology or new forms of integrated resource planning (IRP), to these funds, they will become well targeted and cost-effective.

14. That private sector initiatives, such as energy service companies (ESCOs) and other commercial schemes, and greater use of funds provided by international financing institutions should be encouraged. International cooperation re-focusing on these aspects could generate networking, codes of conduct (quality standards as EMAS and ISO 14000), financial and technical guidelines, interaction between donors, local recipients and international financing institutions, markets for energy service projects, promotion of "green" electricity and electricity savings, new assessment and monitoring techniques for demand-side management, etc.

15. That special efforts should be put in capacity building for energy efficiency instruments, .e.g. data collection and measurements, project management, project appraisal, procurement, supervision, monitoring, financial engineering, etc., mostly focused on economies in transition.

Economic dynamics

To guarantee that most opportunities for energy efficiency are taken up, all investments and activities that are energy consuming should reflect environmental and social externalities. According to the Energy Conservation Initiative, the market economy function is in place in many countries. Subsidies for fossil fuel consumption and cross-subsidies between sectors are still frequent, not only in economies in transition. Subsidies today are often used to address social concerns and to support certain industries and
regions. Environmental and social externalities are only rarely included in energy pricing and financing. Higher prices for fossil fuels reflecting externalities will increase, though not protect, demand for energy efficiency and will also make long-term investments in energy efficiency and renewables more secure. In
addition, there is a need for support mechanisms to protect the development of energy efficiency and renewable energy. The introduction of fiscal/economic incentives and disincentives may be a preferable solution. A recent analysis presented to the G8 by IEA indicates that introducing a uniform carbon tax on
fossil fuels minimizes welfare losses globally. A number of energy/carbon tax models are already in use.

It is recommended:

16. That economic dynamics should be stimulated through real cost pricing, first of all by reforming subsidies for fossil fuel consumption (including electricity). Environmental externalities should be reflected in energy prices.

17. That support mechanisms should be promoted during the transition, recognizing that subsidies today are often used to address social concerns and to support certain industries. Alternative mechanisms could focus on improving end-use efficiency, thereby reducing energy-related expenditures rather than subsidizing energy use. Relevant international organizations should collect and disseminate such experience also in the form of regular seminars and the development and dissemination of price models.

18. That energy consumers should receive effective price signals, also including environmental aspects, to motivate them to take action.

19. That the market transformation should be stimulated towards increasing demand for more energy-efficient technology. An important step is to promote consumers' awareness about the life-cycle costs of energy.

20. That experiences on models of energy/carbon taxes should be shared and their development promoted. A national taxation model should be carefully designed in order to reflect externalities, to be cost-effective, and to achieve the optimal development of energy efficiency and renewable investments with respect to environment, economy, employment, and stable

long-term sustainable energy supply. Energy/carbon taxes or even minimum excise duties may be important steps to shift taxation from labour to resources, thus stimulating employment and save resources.

21. That the option of using a certain part of the tax, e.g. 1-2 per cent of the energy price to raise revenue for energy efficiency programmes and subsidy schemes should be considered. This recommendation could be particularly considered in countries with economies in transition.

22. That effective legal and economic actions should be taken to overcome the non-payment for energy services in transition economies. Economic hardship among low-income or other disadvantaged social groups should be solved separately by governmental compensation schemes, including subsidies for energy conservation investments, in addition to any general price, taxation and subsidy structure.

23. That cost-effective energy efficiency investments that are essential to the success of an environmentally benign effort should be promoted, especially in the transfer of funding and assistance. In many countries in transition long-term capital is scarce, and the legal and regulatory uncertainty does not attract investors. The following could be considered:

- Development of skills in preparing business plans, financial engineering and use of guides to investments could be helpful.;
- Use of demonstration instruments, e.g. energy efficiency demonstration zones as promoted by UN/ECE, with certain legal, financial and fiscal privileges have shown to be useful in a number of cases;
- Other appropriate initiatives in the private sector like energy service companies (ESCOs), third party financing, joint implementation, creation of markets for trade of emissions, integrated resource planning and allocation, revolving funds, etc. could reveal good opportunities to promote investments.

24. That an international standardized code of conduct for energy efficiency investments should be developed, whereby the specific local situation is taken into account, e.g. in the framework of multilateral conventions or of the activities of relevant international organizations. This code of conduct should promote small-scale investments and enable transparency and comparability, e.g. to assist in the development of joint implementation mechanisms and ‘clearing house’ functions.

25. That measures should be taken so that all investments, bilateral aid, funding, etc. in energy and energy services will be subject to - at least - a simple energy and environmental impact assessment.

26. That experience with job creation should be shared and information exchanged internationally. Job creation through energy efficiency programmes, investments and market transformation is a very promising issue to investigate and develop, when compared to supply-side investment.

Regulatory framework and legislative approximation

Integrating energy efficiency aspects in the energy sector as well as in other parts of society depends to a large extent on effective regulation and legislation. According to the Energy Conservation Initiative, energy efficiency aspects still need to be further integrated. There are very different regulations in the energy sector as to the organization of the private and public sector, utilities, technologies, standards, etc. These differences constitute barriers to the international development of energy efficiency. They are to some extent subject to a general approximation and harmonization due to World Trade Organization regulations, the requirements of the Energy Charter Treaty, and EU initiatives. As to the specific regulation of utilities, it should be recognized that demand-side issues are still not integrated sufficiently into utilities planning and activities.

It is recommended:

27. That governments should be encouraged to examine their market structure and utilities regulations in a way that may ensure a consistent focus on demand-side energy services, and make energy efficiency investments viable. This could be supported by rational planning techniques such as integrated resource planning (IRP). International cooperation should lead to the dissemination of adequate models to governments, municipalities, consumers, industry, etc. in all countries, cf. the initiatives taken by the European Union in central and eastern Europe, by the World Bank, and in the IEA implementing agreements.

28. That governments should consider, to the extent practical, incorporating energy efficiency into regulations and legislation. Energy efficiency and environmental considerations should, when possible, be integrated in all fields of government and sectoral activity and in policy-making. In this connection, energy efficiency policies should be seen as an opportunity both to create a 'level playing field' as regards market dynamics and to implement certain activities as a public service which could be maintained by different actors: - utilities, public entities, private actors, energy service companies (ESCOs), etc. Regulations may be tailored accordingly, considering options for actors to achieve satisfactory revenues on their investments and to benefit from successful energy efficiency projects and programmes, and also ensuring that potentials are fully realized. Rational planning techniques may assist decision-making by creating transparency.

29. That governments should promote combined heat and power and district heating as well as small-scale energy supply and renewable energy. This might be done, as appropriate, by regulation and/or economic instruments giving priority to these technologies in urban development, setting up energy market structures, financing, load dispatch operation, etc.

30. That best practices in the field of regulation should be developed and disseminated (i.e. the collection of data, establishment of statistics, procedures for monitoring the environment and energy use, use of indicators and reviews, etc.). Statistics should be organized in a logical way,

and be improved and made compatible. When relevant, regular monitoring and review processes should be introduced, e.g. in an international cooperative effort including the Energy Charter Secretariat, Eurostat, the European Commission, IEA, ECE and others.

31. That energy efficiency in transport should be improved. Transport with its rapidly growing energy consumption is a very important sector to be addressed. There are many policy options: differentiated fuel and vehicle taxation and other fiscal measures, voluntary or mandatory efficiency targets for cars, behavioural measures, urban planning and urban transport and modal split strategies, road pricing, funding of energy efficient transport, research, development and demonstration of new and cleaner modes of transport and infrastructure nationally and internationally, economic incentives to make international transport efficient, new infrastructure, etc. The international dimension is important, as the vehicle industry is highly international. The implementation of the Programme of Joint Action adopted at the Ministerial Regional Conference on Transport and the Environment organized by ECE in November 1997 in Vienna should be accelerated, as appropriate. Relevant work in the transport sector undertaken by the European Conference of Ministers of Transport (ECMT), EU, the Organisation for Economic Co-operation and Development (OECD), IEA, the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) should be supported.

32. That efficiency and environmentally friendly measures should be stimulated in all modes of transport (road, rail, air, sea) by implementing voluntary or mandatory standards and targets. This is also an international task which should be initiated in a cooperative effort.

33. That governments should build dynamic elements into regulations, inter alia, to support a swift market transformation. This could include lead times for higher performance, regular revision of standards and codes, advances by innovative procurement, research and development, integration of new technologies, etc. Regulation should not be retrospective but make way for sustained activity in energy efficiency such as updating of technology standards, development of advanced products, growth in energy service company activity, support of advanced voluntary agreements, market penetration, etc.

Technology aspects

Energy efficient technologies should constantly advance in performance, and they should also penetrate the market. For instance, the Energy Charter Treaty and its protocol address issues of technology development, transfer and dissemination in an east-west context. The Energy Conservation Initiative has
put special emphasis on the interaction of market conditions and development and dissemination of new technologies with environmental, economic and energy efficiency benefits. The interaction should be as
dynamic as possible in improving energy service performance, market penetration and environmental qualities. Essential to technology improvements and marketing is the stimulation of demand for advanced, yet cost-effective technologies. Thus, it is recognized that technological progress is demand-driven but also dependent on support from research and development and demonstration and other demand-side activities. A mature and qualified energy efficiency industry - manufacturers, distributors,
installers, consultants, etc. - plays a crucial role in facilitating the introduction of technologies.

It is recommended:

34. That governments should support efforts in technology development and market penetration, including a number of policies and programmes as research, development and demonstration, advanced technology procurement, marketing, subsidies/rebates, labelling, standards, audits and certifications. Energy efficiency is viewed as an integral part of regulations, standards and norms concerning appliances and equipment.

35. That governments should establish and increase funds for research, development and demonstration in energy-efficient technologies. These shall be designed so as not to postpone market measures.

36. That energy labelling and standards regarding minimum energy efficiency, targets for advanced technologies, etc. should be set internationally. Energy labelling schemes already cover a large number of countries, and should be disseminated further. Also, mandatory energy efficiency standards have been established in many countries. Furthermore, the European Commission plays an active role in promoting voluntary commitments by European industry to make household appliances more energy efficient. Expanded international cooperation on voluntary agreements with industry may be very useful supplementing instruments to improve energy efficiency, especially when supported by regulatory alternatives.

37. That governments should take action, when appropriate, to develop international technical standards and norms that pave the way for energy efficiency policies, e.g. in international electrotechnical cooperation and in the international standardization work of CEN and CEN/ELEC.

38. That guidelines and requirements should be developed internationally on the basis of 'best practice' in the industrial sector, including the implementation of energy audit schemes and projecting methods. The industrial sector represents a challenging technology aspect, especially in countries with economies in transition. The total renewal of industries substituting outdated ones offers opportunities for installing best available technology on the basis of best practice projecting.

39. That experiences should be exchanged on successful technology procurement schemes, and that countries should consider possibilities for replicating such schemes on an international scale to ensure that best available energy-efficient technologies penetrate market. It is recommended that procurement schemes should be integrated in investment and assistance programmes.

40. That the use of building codes and building energy performance certificates should be implemented widely in all countries. Guiding principles disseminated on an international level would be helpful. Requirements should be updated from time to time, and emphasis should be put on enforcing the codes.

41. That technology transfer from more advanced manufacturers to markets with more traditional products should be promoted, e.g. by stimulating joint venture production in such markets. This idea could be further developed both in countries with economies in transition and in a number of industrialized countries and should go hand in hand with the approximation of technical standards, etc.

42. That the dissemination of information on best experience with district heating and cooling infrastructure and combined heat and power (CHP) stations, and of small-scale energy supply and renewable energy, should be promoted internationally.

43. That international cooperation on combined heat and power and district heating and cooling should be strengthened. Combined heat and power and district heating may become a major contributor to achieving CO_2 reduction and at the same time to securing heat supply in a feasible way, especially in economies in transition with district heating grids. Another option is to combine the rehabilitation of district heating networks and the installation of combined heat and power stations with generally improving the quality of residential buildings. This could be carried out by energy service companies (ESCOs).

F. Specific international actions and follow up

Section E listed a wide range of recommendations to implement energy efficiency policies categorized in strategic, organizational, economic, regulatory and technological initiatives.

Some initiatives are national, some are aimed at the international level. The international level continues to draw increased attention because a worldwide integration of investments and trade in technology and energy is taking place.

The annex below describes a number of specific international actions. Coordinated actions are increasingly necessary to achieve real results and to accelerate the development of energy efficiency. Such coordinated actions should be implemented with due regard to the dynamics of market economic principles. The actions mentioned in the annex are all in accordance with this overall requirement. This list of follow-up actions should therefore be implemented in relevant international bodies.

ANNEX

A LIST OF RECOMMENDATIONS FOR SPECIFIC INTERNATIONAL ACTIONS

Actions to facilitate the development of strategic and analytic capabilities

1. Promote compliance with the Kyoto Protocol to the United Nations Framework Convention on Climate Change, the Energy Charter Treaty Protocol on Energy Efficiency and Related Environmental Aspects, and the UN/ECE Convention on Long-range Transboundary Air Pollution and its protocols.

2. Further assistance from international organizations to governments in conducting strategic planning concerning energy and environment.

3. Establish international partnerships between the actors on the energy scene, including the private sector, industry, municipalities, local cooperatives, housing associations, NGOs etc.

4. Promote international cooperation on best practices in the collection of data, compilation of statistics and implementation of environmental certification programmes (such as EMAS and ISO 14000).

Actions to ensure accurate pricing

5. Develop and organize international training programmes dealing with the complexity of pricing mechanisms.

6. Review subsidies with the purpose of deriving specific recommendations to countries in transition on how to solve the problems related to removing energy subsidies. The experience of those countries that have solved the problems should be disseminated.

Actions to introduce environmental/energy taxes

7. Organize an international forum for the development and exchange of taxation models; hereby negotiate, in an appropriate body, international energy and/or CO_2 taxes (including greenhouse gases) at high level.

8. Develop, internationally, a methodology for determining the costs of externalities.

Actions to introduce international standards for product requirements and labelling

9. Promote voluntary international cooperation on energy labelling for appliances.

10. Promote voluntary international cooperation on performance requirements for appliances.

Actions to accelerate the development of energy efficient technology

11. Support existing bodies and organizations aiming to transform the market by using technology transfer, 'nursing markets' and assisting the creation of joint venture productions.

12. Further develop technology procurement, investigate the potential for international procurement projects, promote ideas for countries in transition with a high energy intensity and formerly centralized production.

13. Improve and promote district heating (DH) and combined heat and power (CHP) through:
- The creation of an international centre for CHP;
- The organization of international workshops;
- The setting-up of a purchasers' forum.

14. Develop forms for life cycle cost-application in industry and public procurement together with business associations.

Actions to promote the financing of investments in energy efficiency

15. Attract financing and secure investments for small homogenous projects by grouping them together into coherent packages such as Energy Efficiency Demonstration Zones, and test these under "Activities Implemented Jointly" (AIJ).

16. Create national and international, preferably revolving, energy saving funds and encourage ESCO and third-party financing.

17. Exchange through workshops, etc. experience in financing. Develop mechanisms for financing small-scale projects by aggregating, bundling and assisting in a 'clearing house' facility.

Actions to promote the development of instruments to reduce the energy consumption and the environmental impact of the transport sector

18. Develop new 'green' infrastructure in the transport sector by bringing interested parties together, form a purchasers' forum for large-scale long-term (but low-cost) green infrastructure investments, etc.

19. Develop zero- or low-emission vehicles, including procurement and voluntary or mandatory standards and targets.

20. Develop energy-efficient and environmentally sound transport management systems.

Other specific actions

21. Cooperate internationally on the issue of ‘green’ job creation.

22. Develop techniques for monitoring and forecasting based on a ‘bottom-up’ disaggregated approach, aiming at identifying energy efficiency potentials and designing cost-effective programmes.