

THE EUROPEAN PHOTOVOLTAIC TECHNOLOGY PLATFORM

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ABSTRACT

The European Photovoltaic Technology Platform is one of the European Technology Platforms, a new instrument proposed by the European Commission. European Technology Platforms (ETPs) are a mechanism to bring together all interested stakeholders to develop a long-term vision to address a specific challenge, create a coherent, dynamic strategy to achieve that vision and steer the implementation of an action plan to deliver agreed programmes of activities and optimise the benefits for all parties. The European Photovoltaic Technology Platform has recently been established to define, support and accompany the implementation of a coherent and comprehensive strategic plan for photovoltaics. The platform will mobilise all stakeholders sharing a long-term European vision for PV, helping to ensure that Europe maintains and improves its industrial position. The platform will realise a European Strategic Research Agenda for PV for the next decade(s). Guided by a Steering Committee of 20 high level decision-makers representing all relevant European PV Stakeholders, the European PV Technology Platform comprises 4 Working Groups dealing with the subjects *policy and instruments; market deployment; science, technology and applications* as well as *developing countries* and is supported by a secretariat.

INTRODUCTION

The history

In 2003, the European Commission initiated and established the European Photovoltaic Technology Research Advisory Council, PV TRAC. PV TRAC had the mission to contribute to the establishment of a globally competitive European photovoltaic industry by developing a vision for photovoltaics for 2030 and beyond. This vision report [1] was prepared during 2004 and discussed at a dedicated conference in September 2004 [2].

The vision report has three main parts, namely the description of the present situation of photovoltaics and its context, the vision for 2030 as well as the way forward towards achieving this vision. The report identifies the major technical and non-technical barriers to uptake of the technology along with an outline strategic research agenda designed to ensure a breakthrough of PV and an increase in deployment in the European Union and worldwide. The main recommendation of the vision report is the proposal for a European Photovoltaic Technology Platform. The PV Technology Platform is the preferred vehicle to mobilise and pursue PV-related initiatives, programmes and policies bringing together all relevant stakeholders from science, industry and policy areas.

The vision 2030

Starting from system costs of photovoltaics in 2004 (grid-connected systems) of 5€/Wp or 0.25 - 0.65 €/kWh, depending on irradiation across Europe, the vision for 2030 is a cost for solar electricity between 0.05 and 0.12 €/kWh. The following cost development is the basis for these figures:

Table 1. Cost development of photovoltaics (Vision Report [1])

Year	Module costs [€/Wp]	System costs [€/Wp]
2010	2	3
2020	< 1	2
2030	< 0.5	1

To achieve this vision, substantial technological development needs to occur, accompanied by a rapid and sustainable industry and market deployment.

Establishment of the PV Technology Platform

Following the publication of the finalized vision report, the European Commission launched the process to establish the European Photovoltaic Technology Platform, together with all relevant stakeholders. A call was issued for participants interested to work in the platform. Subsequently, a Steering Committee, four Working Groups and a Mirror Group were established throughout 2005.

EUROPEAN TECHNOLOGY PLATFORMS

At the initiative of the European Commission and industry, European Technology Platforms (ETPs) are being set up, which bring together companies, research institutions, the financial world and regulatory authorities at European level to define a common research agenda which should mobilize a critical mass of - national and European – public and private resources.

The primary objective of an ETP is to boost European industrial competitiveness. It achieves this by defining research and development priorities, timeframes and action plans on a number of strategically important issues where achieving Europe's future growth, competitiveness and sustainability objectives is dependent on major research and technological advances in the medium to long-term. ETPs focus on areas of significant economic impact and high societal relevance where there is strong public interest and scope for genuine value added through a European level response.

The first ETPs emerged in 2002-2003. Since then, the concept has been taken up widely and there are now 29 ETPs up and running. These span a wide range of technologies which are key to Europe's future growth and competitiveness objectives [3].

The European Commission began promoting the concept in 2003 and since then has provided, as appropriate,

guidance and support as it sees ETPs as playing an important role in helping to identify new research priorities. Set up as informal discussion networks, primarily upon the initiative of industry, the European Commission encourages this bottom-up, flexible approach to defining medium to long-term research needs. At the same time, the Commission does not "own" ETPs nor is it bound by their results.

OVERALL OBJECTIVES & STRUCTURE

The overall objectives of the European Photovoltaic Technology Platform are the following:

- Sharing a long term European vision for PV
- Realizing a Strategic Research Agenda
- Recommendations for implementation
- Ensuring Europe's industrial leadership

More precisely, the European Photovoltaic Technology Platform will:

- implement a strategic plan to provide advice and expertise to the decision makers to allow them to make informed decisions regarding the long term potential of photovoltaics;
- propose actions to all policy makers to help to ensure that clear, coherent priorities are established and that support is fully integrated, thereby facilitating implementation;
- foster joint initiatives involving stakeholders in the formulation of research programmes;
- ensure strong links and co-ordination between industry, research and market.

The European Photovoltaic Technology Platform has the following structure

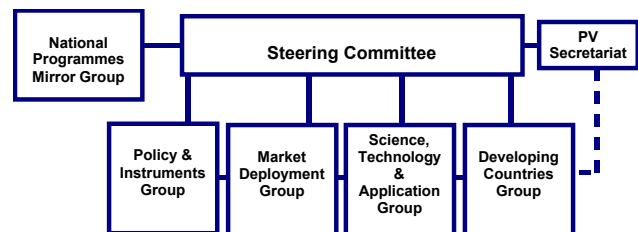


Fig. 1 Structure of the European PV Technology Platform

The European Photovoltaic Technology Platform is headed by a Steering Committee comprised by 20 high level decision-makers representing all relevant European PV Stakeholders (9 from industry, 5 from research and 6 from policy and institutions). The mission of the Steering Committee is:

- to create, implement, support and stimulate a coherent and dynamic strategy to take forward and further consolidate the "Vision for Photovoltaics".

- to take the responsibility to ensure a rapid development of a world-class, cost-competitive European photovoltaic sector.

WORKING GROUPS

WG 1 – Policy and Instruments

The objectives of the Working Group “Policy & Instruments” are:

- to assess policies and instruments for a sustainable photovoltaic market deployment,
- to *foster* the dialogue with different stakeholders in view of maximizing the benefits, impact and efficiency of those policies, and
- to *promote* appropriate policies and instruments for sustainable photovoltaic market deployment.

Appropriate policies in different fields play a crucial role for a sustainable deployment of photovoltaics. The challenge is to design policies in such a way that they achieve conditions for a self-sustained and competitive global market of photovoltaic systems in various applications in the fastest possible way. A balanced set of policies acting both on the supply and demand side can achieve efficient technology learning and sustained growth of the European photovoltaic industry. For this purpose, the Working Group is concentrating its efforts on three policy fields, namely industry policy, energy policy and environmental policy.

For the three policy areas, the Working Group builds on existing information and experience and strives to provide added value through its concentrated, but broadly based efforts. The process follows the following stages:

- Identification of relevant issues
- Elaboration of short term facts
- Identification of long term needs
- Proposal of appropriate measures
- Dialogue with key stakeholders in the field
- Input and recommendations to policy consultation

The goals set forth in the PV Vision report for 2030 will be broken down to intermediate periods and the necessary policy efforts within these.

WG 2 – Market deployment

The objectives of the Working Group “Market deployment” are:

- to develop a strategy for information procurement on the best conditions for a market development,
- to identify promotion channels and to increase awareness of PV by tackling the perception problems of stakeholders (influencers, relays),
- to initiate and promote education programmes for PV stakeholders (universities, architects),

- to bring building industries and professionals in position to appropriate PV in order to use it as versatile building component, and
- to mobilize all existing means for market deployment.

Market development relies not only on adequate policies but also on a favourable framework, with reduced barriers and promotional measures helping to develop a sustainable market. The mission of the group is to help, on a European level, to the creation of a favourable framework.

Five fields have been defined to achieve the objectives of the Working Group; for each field, priority actions have been identified as follows:

- Environment, Health and safety (EHS): waste, recycling and reusing strategy ; determine energy-payback time of PV systems;
- Building Integrated PV (BIPV): link with the Construction Platform; education and training; information and awareness; standards and certification;
- Market penetration: competitiveness and socio-economic issues; education and awareness; standards and certification;
- Financial Issues: awareness to financial institutions; PV financial products;
- Access to the grid: link with the Network of the Future Platform; standards and certification; dialogue with utilities;

A horizontal action, concerning the above five fields, has been identified:

- Education: influence to get PV and awareness on RES technologies included into school programmes

WG 3 – Science, technology and applications

The objectives of the Working Group “Science, technology and applications” are:

- to define (widely accepted) technical needs for the development of PV, to enable large-scale application with a major role for European stakeholders,
- to develop a Strategic Research Agenda (SRA) to help realizing the “Vision for Photovoltaic Technology” as formulated by PV TRAC. This SRA is input for the 7th Framework Programme of the EU, but it is also important for coordination of R&D programmes in member states and EU-funded research, and
- to contribute to the establishment of a European Photovoltaic Research Area (PV-ERA).

The level of ambition for the further development of PV is very high: the long-term aims are to bring turn-key system prices down by a factor of 5 to 10 and to increase the efficiency of modules by at least a factor of 2 to 3. Moreover, the number of technology options is large and still growing. Finally, the global PV business is highly com-

petitive with many powerful players ready to compete with the European PV sector.

Given these circumstances a joint and coherent European approach towards research and development is of vital importance. This applies to defining R&D needs and priorities, but also to performing this R&D. Working Group 3 of the PV Technology Platform brings together the relevant stakeholders to pave the road towards such a European approach.

The Working Group has installed subgroups covering the following topics:

- wafer-type crystalline silicon technology,
- existing thin-film technologies,
- emerging and novel PV technologies,
- concentrator PV systems,
- Balance-of-System (BoS) components and systems,
- application-specific aspects and certification.

These subgroups have consulted stakeholders in (a.o.) the R&D and industry sectors to identify challenges and bottlenecks. In a plenary session, priorities per topic and overall have been discussed for short, medium and long-term. This is the essential input for the Strategic Research Agenda, due by the middle of 2006.

WG 4 – Developing Countries

The objectives of the Working Group “Developing countries” are:

- to develop a long term strategy for promoting PV and contributing to poverty alleviation by providing electricity in developing countries,
- to create a clear program and policy for sustainable development in developing countries,
- to lobby to keep motivation for these markets,
- to determine concrete quantitative and qualitative targets to be achieved,
- to create sustainable poles of development by creating local infrastructures, committing local people and ensure feasible projects,
- to address the need for communication for all stakeholders,
- to identify promotion channels and increase awareness of PV by tackling the perception problems of inhabitants, and
- to mobilize all existing actions and create synergies in favour of people who do not have access to electricity

Appropriate strategies, tools and policies have to be developed to promote electrification from renewable energy sources as an affordable and reliable energy service and, therefore, as an essential contribution to poverty alleviation within developing countries.

The Working Group will develop a number of instruments to address these issues and will work to generate the adequate framework to provide electricity from PV.

In order to contribute to sustainable development within developing countries by providing PV electrification solutions, the Working Group is performing the following activities:

- Establishment of a general overview of the current situation for PV electrification within developing countries,
- Elaboration of a list of recommendations on PV development within developing countries,
- Development of appropriate tools and schemes to address electrification needs within developing countries.

Mirror Group

A “Mirror Group” with government representatives from EU25 member states and associated countries has been established. This Mirror Group, acting in co-operation with the PV Platform Steering Committee and its Governing Board has a crucial role to play in goal and target setting, proposing actions and providing opinion and feedback on strategies, activities and results generated through the Platform operations. The main objectives are:

- to ensure an appropriate interface for coordination and the representation of relevant national, regional or local initiatives and activities under the technology platform,
- to provide representation and input to the Steering Committee and Working Groups from a national, regional or local perspective, and
- to advance the European Research Area (ERA) by initiating activities for closer coordination and co-operation between national and regional programmes, under the orientations provided by the Technology Platform.

PV Secretariat

PV-SEC, the Secretariat for the PV Technology Platform is a supporting entity to the PV platform financed by the EC.

The main objective of PV-SEC is to provide organisational support to the Steering Committee and the other entities of the Platform, in particular the Working Groups. The tasks are carried out by a consortium of 4 partners: the coordinator EPIA (the European Photovoltaic Industry Association), WIP, the EUREC Agency and the EC JRC (Joint Research Centre).

The preparation and organisation of the Platform meetings are the main task of the Secretariat. Furthermore, the Secretariat coordinates the flow of information between the Platform stakeholders, the Working Groups and the Steering Committee.

PV-SEC is responsible for the dedicated website of the European Photovoltaic Technology Platform where all

relevant information is available: www.eupvplatform.org [4].

OUTLOOK

The different entities of the European Photovoltaic Technology Platform as described above have now all become operational and they have defined their action plans. A General Assembly of the Platform is being held on 19 May 2006 in the European Parliament in Brussels where all European PV stakeholders are invited to discuss the Platform strategy and actions [5].

CONCLUSION

The European Photovoltaic Technology Platform is a new vehicle to strengthen the position of photovoltaics in Europe. It's main asset is the broad and open co-operation of stakeholders from science, industry and policy. The European Photovoltaic Technology Platform addresses both long term strategic aspects of the technology as well

as short and medium term needs for market implementation. By this unique approach, the Platform strives for the most rapid and sustainable deployment of photovoltaics in Europe and thereby contributes to a strong European PV sector.

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