Multilateral Working Group on
Implementing the Major Economies Forum Global Partnership's
Technology Action Plans for Wind and Solar Technologies

A Long-Term Strategy on Joint Capacity Building – Work Package 2: Functional Specifications for a Web Based Platform: Transparency in Capacity Building

By Germany, Denmark and Spain*

FINAL DRAFT FOR WORKSHOP

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I. Introduction

In the discussions of the Multilateral Solar and Wind Working Group during the workshop in Bonn (in June 2010) and the meeting in Washington (in July 2010) it has been agreed to focus on two key issues amongst the actions proposed within the Solar and Wind TAPs, a (I) Global Solar and Wind Atlas and a (II) Long-term Strategy on Joint Capacity Building and Know-how Transfer. This discussion paper focuses on the development of a transparency platform for capacity building efforts. This will be a concrete measure forming a crucial building block of a successful long-term strategy of joint capacity building as described in the corresponding paper "A Long-Term Strategy on Joint Capacity Building".

The following remarks work towards the implementation of such a platform as a first step of action to implement the MEF technology action plans on solar and wind energy. With a detailed analysis of features and success factors to be considered for a web-based transparency platform, the working group aims to facilitate the future implementation. Cost analysis as well as a time structure for implementation will, however, be left to an implementing agency that will be ready to up-take these proposals and that will be able to ensure continuous service of operation, quality management and maintenance of the platform.

II. Objective and Scope

The objective of this document is to define the functional specifications of a web based platform gathering information about capacity building opportunities in the wind and solar energy sector. This web page will increase the transparency of existing capacity building measures, it will facilitate the access to education and training offered and will improve the coordination between the different institutions involved in capacity building activities.

The web portal could potentially be integrated into the global wind and solar atlas proposed that is discussed in the companion discussion paper (TAP I, Global Solar and Wind Atlas).

Scope

The web-based portal will serve as a transparency platform for capacity building opportunities in the solar and wind energy sectors. The platform could be built up in two phases: in a first phase, the web page will offer information services. In a second phase, the web could have an additional role in managing training offers.

First phase: Information on education and training.

The platform should include a global **repository** of courses and training offers with detailed information on:

- Institutions (e.g. universities, schools etc.) providing renewable energy education and training
- Education and training opportunities in programs and courses, presented in clear structures

- Breakdown into national and regional offers, presented on separate subpages in the respective language
- Offers at the international level
- Structures and outlines for courses and programs

The entries should include the possibility to comment on and evaluate specific courses and training opportunities to registered users that have taken part in such course/training.

The website should include a **forum for trainers** to facilitate the exchange of information. Trainers might use the website to market themselves (within a given frame that ensures transparency regarding the quality of the offer) and to get in touch with colleagues to exchange information. The database for trainers should include sections for references, publications and topics of specialization (cf. Section 4. Quality Management).

It is furthermore recommended to include a **news section** to highlight new courses or training actions that are included in the web.

The website should also include a "**links" section** with references to other sites and initiatives related to capacity building in the wind and solar energy sectors.

Second phase: E-learning and support for educational activities design: a pool of trainers and course materials for the solar and wind energy sectors.

The platform could in a second phase be extended to also include **e-learning offers**, covering demand that is not satisfactorily covered by commercial providers. In this respect it will have to be specified what the target groups are, which educational level(s) the e-learning offers will address and what the conditions will be (i.e. against payment for some groups, free of charge for others).

A viable option would be to design e-learning modules which address an audience crucial for the successful deployment of renewable energy technologies, but not able or willing to pay for online content. Thereby inefficient competition with commercial e-learning provider can be avoided. This could include:

1. Target group "General interested public": e-learning modules informing about basics of different technologies, applications, preconditions and costs.

2. Target group "Ministries": e-learning modules providing training on basics of different technologies but also on supporting schemes for renewable and legal aspects.

It should also be kept in mind that e-learning features might require online support by lecturers, which will need sustainable financial sources. This could be either provided by a multilateral cooperation using national funding or preferentially through an international implementing organisation (Cf. Section 4).

As another feature for the second phase, **online subscription** to some courses and a global repository of experts to facilitate the organisation of courses by third parties could be introduced. **Management of some courses** could also be made possible through the platform, potentially including registration, payment, web casting and interactive participation in the training through collaborative tools.

III. General characteristics of the platform

During the last meetings of the Multilateral Solar and Wind Working Group it has become apparent that a transparency platform for CB will need to meet various characteristics in order to operate successfully. Several of them are outlined below.

III.1 User driven design

The web page should be designed taking into account the specific needs of different users involved in CB, providing a tool for users to guide them through the individual search process. This will ensure results that best fit the user's needs.

The comprehensive identification of potential user profiles is important to define properly the areas of knowledge and skills to be considered and the categories of information that need to be covered by data entries.

For a stepwise approach it would be necessary to prioritise identified user groups to be catered for in the first step of the establishment of the platform. In the further development of the platform the needs of other user groups would subsequently be provided for. In this regard, reference is made to the detailed section on user group analysis along the entire value chain of solar and wind energy technology, in the working group paper on the long-term strategy of CB.

III.2 Easy access and attractiveness for users

The structure of the platform should be tailored to facilitate user access to information, taking into account parameters like geographic location, area of knowledge, level of the training and language. The choice between different language options can be a crucial aspect to render the platform easily accessible.

To ensure successful marketing of the platform, a qualified team will need to work on logistics, trainer assessment, quality management, possibly the elaboration of learning materials, and the provision of administrative services for sustainable financial structures through fees from participants or other external funding. An institution will be needed to perform these tasks continuously.

III.3 Interactive elements for trainers and for organising institutions of educational events

A forum for trainers should be established and managed, with the possibility of creating discussion threads on the different technologies, languages and/or geographic areas. The forum will help to create an informal network of trainers and educational event organizers. It will also help to identify new educational offers and initiatives and can thus help to maintain the database up to date.

It can be expected that there will be a high level of interest from trainers to be listed in order to market the trainings offered. To make the platform a powerful tool for users, it will need to provide transparent information that allows assessing the quality and experience of trainers and institutions listed. The successful registration should therefore depend on the submission of predefined information and documents on, inter alia, previous experience and references

with contact details. This will also help to maintain a high level of quality of the information provided.

With regard to user fora, previous experiences have shown that open discussions and exchange in a public online forum will be rare among the targeted users, as they are reluctant to share problems and maybe appear to admit weaknesses. It will be widely used to create first contacts with other actors to exchange bilaterally. Therefore, interactive elements for users of CB offers should cover the inclusion of contact details, specialisation and references in all entries. The database on capacity building offers should include the possibility of evaluating and rating courses and trainings by former users.

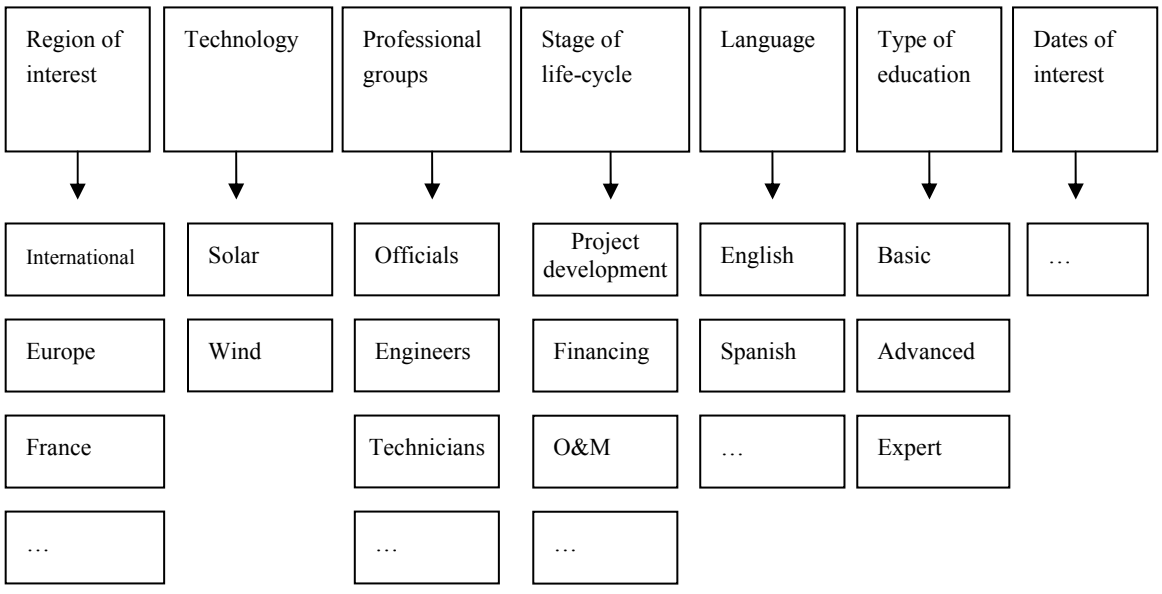
In order to facilitate keeping the platform up to date, it should include a section for registering educational events. Registration should only become effective after the approval of the web administrator.

IV. Web content

IV.1 User profile identification

The website will include a wizard to help the users to find the most suitable educational offer, guiding the user through a matrix to define his or her profile. The wizard should be based on the in-depth analysis of user groups (see above) and on additional relevant criteria such as geographic location. A possible structure is depicted in Figure 1.

Figure 1. User profile based on 6 parameters

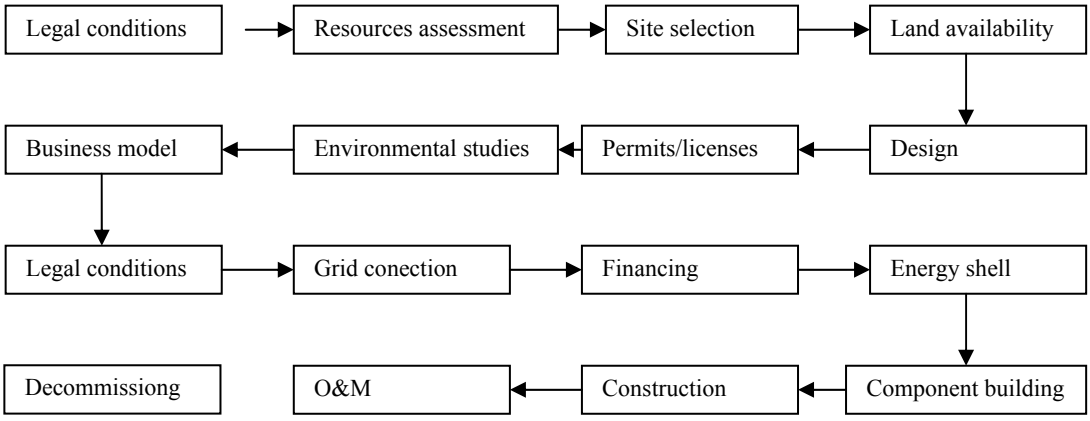


The platform will allow the user to build his or her profile by selecting the available options in the menu associated to each parameter. This profile will be used to help in the search by filtering the educational offers in the database according to the preferences of the user.

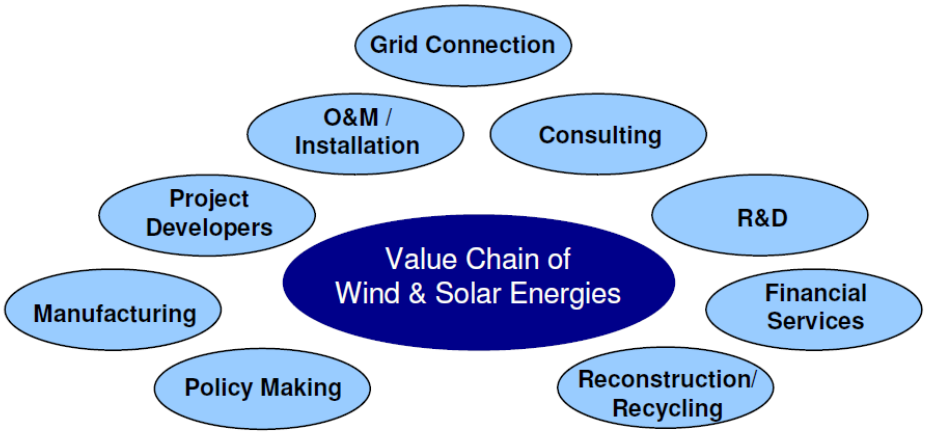
IV.2 Fields of knowledge and classification of CB offers

The fields of knowledge and associated skills to be catered for on the website include all relevant activities along the life-cycle of wind and solar installations. From a project management point of view these are the main steps involved in the development of a renewable energies project:

Figure 2. Typical steps in a renewable energy project connected to the grid.



At each stage of this life-cycle, different actors will be involved forming a complex value-chain associated with wind and solar installations. In the corresponding paper of the working group, which deals with the development of a long term strategy for capacity building initiatives, the value-chain of wind and solar energy projects and the job profiles arising is further analysed. The classification has been made as follows:



Politics	Management		Sector specific personnel							
Officials / Authori-ties	Business men	Adminis-trative / Marketing staff	Scientists / technical and policy experts	Highly qualified engineers	Specialized lawyers / economists	Experts in social surveys / training	Financiers and economists	Logistics experts	Techni-cians	Electri-cians	Workers

The platform should therefore include information on the capacity building offers in all areas of knowledge during the value chain of wind and solar energy projects as well as on the various job profiles arising.

The platform should therefore include at least the following fields of knowledge related to wind and solar energies:

Table 1: Fields of knowledge to be included in the platform

▪ Policy making	▪ Grid integration
▪ Project management	▪ Standalone systems
▪ Contract management	▪ Construction
▪ Financing	▪ Health and safety
▪ Insurance	▪ Operation and maintenance
▪ Spatial planning	▪ Component design
▪ Environment	▪ Testing of components
▪ Wind resources assessment	▪ Technology status
▪ Solar resources assessment	▪ Standards
▪ Wind energy forecasting	▪ Decommissioning
▪ Solar energy forecasting	▪ Etc.

Although some of the knowledge areas are only relevant to experts (i.e. component design), various levels of training can be established for most of the areas. These fields of knowledge will be used to classify each educational offer and to guide the user in the search process.

Types of education

In order to organise the database of educational and training offers each entry has to be classified according to the following list of types of education:

- Primary (basic).
- Secondary.
- Tertiary
- Expert.

Every educational offer will be identified by the following items:

Table 2: Items for the identification of education offers

▪ Title	▪ Duration
▪ Description	▪ Teaching periods
▪ Type of event (i.e. course, seminar, webinar, practical training, workshop …)	▪ Teachers profile
▪ Content	▪ Language
▪ Learning objectives	▪ Location
▪ Target group	▪ Cost
▪ Number of students in each event	▪ Web page
▪ Field trips	▪ Test / kind of certificate
▪ Practical exercises in design, installation, operation	▪ Provider / institution
▪ Student requisites (i.e. for electrical engineers)	▪ Evaluation and quality control (incl. references and training/educational experience of the institution)
▪ Requirements / prerequisites (i.e. knowledge, health certificates ...)	

IV.3 Differentiated information searching

The main purpose of the platform is to provide users with relevant information on educational opportunities on a global scale. The search tool is therefore a core part of the platform.

Taking into account that there will be many different types of users and types of searches, the platform needs to provide different mechanisms to accommodate this demand:

- Global search: introducing one or more words a list of matching results (courses, events, etc) will be displayed in a list.
- Search by direct filters: this search will allow the user to activate one or more filters depending on his specific profile, search categories might be defined as shown in figure 1 (Region of interest, Technology, Professional groups, Stage of liefe-cycle, Language, Type of education, Dates of interest)
- Wizard: the wizard will help the user to create his profile as explained before by asking questions, which is equivalent to activate the previous filters.

IV.4 Better matching supply and demand – user subscription

Some users could be interested in following the evolution of the educational offer, to help these users to find the course as soon as it is uploaded in the database a subscription will be optional. The user will introduce information on his interests according to the classification of the CB offers (e.g. technology, type of education etc.), as well personal contact details (e.g. name, company, etc.).

If the user has already established a personal profile, the information can be used to configure the subscription. The platform will send registered users regular personalised newsletters with the characteristics of new courses that correspond to the criteria set by the individual user. The system will allow the user to unsubscribe in via email.

These features could later be extended to include an interactive brokering portal for CB offers as it is described in the companion paper on the long-term strategy of CB.

V. Quality Management

V.1 Data acquisition/generation/validation

Different ways of data acquisition need to be considered either alternatively or cumulative:

a) Establishment of regional networks managed by a university or research institution

b) Incentives for students/trainees to provide information

c) Gathering of information through national (governmental) focal points

All of these options require some permanent staff to assure a quality assessment of the data submitted and to regularly keep in touch with contact points, inviting them to provide data updates.

[This section will have to be further elaborated.]

V.2 Updating and Maintenance

One of the key elements of the platform necessary for it to offer added value to users, is to have the database regularly updated, removing non existing educational offers and including new ones on a regular basis. On the other hand the inclusion of a news section with the new offers and information on CB events is important to maintain the interest of the users and to attract new users.

Maintenance is crucial for the long-term success of the platform. Due to the very dynamic environment on which it is focused the updating process and quality filter of the contents is critical to be able to bring useful information to the users. According to previous experience, the number of educational offers to be included amounts to several hundreds. To manage this amount of information, identification of new courses and removal of expired ones requires a significant amount of resources.

V.3 Content Management

As mentioned above, management of the platform is crucial due to the dynamic character of the information and also due to the interaction with the users (people looking for education in wind and solar energies, and teachers).

Previous experience has shown that such a platform is not self-maintaining. To ensure the sustainable provision of relevant information in a reliable quality, the platform cannot solely rely on the training and educational institutions to feed-in the comprehensive and up to date data. A central institution will not only be needed for operation and maintenance but also to ensure continuity of maintenance and quality management.

It should be obligatory for every data entry to include contact details to be able to verify and update the submitted information.

Tasks to be performed for the management of the platform on a regular basis include:

- Identification of new educational offers (every 3 months).
- Identification of events related to capacity building (every month).
- Selection and publication of news in the web (twice per month).
- Quality check of the new offers before they are published in the web (weekly).
- Verification of the offers uploaded in the database (continuity check once per year).
- Forum management:
    - Supervision of the content according to the rules of participation.
    - Creation of new forums if required by the users (i.e. for some regions).
- Preparation of some reports on the impact of the platform:
    - Number and evolution of visits.
    - Number and evolution of individual users.
    - Distribution of visits and users per region/country.
    - Number and evolution of the educational offers.
    - Distribution of the educational offers per region/country.
    - Number of participants in the forum.

For the quality assessment of submitted information a set of criteria should be developed.

[These could be spelled out in an annex to this document. Input is appreciated.]

V.4 Financing

[Permanent staff required to perform the above described tasks. Different financing options based on institutions operating the platform, this includes national funding for a multilateral cooperation network or funding through an international organisation. Input is welcomed.]

VI. Existing platforms on capacity building

A number of web pages with similar content have already been created by different institutions, some of them are operational at the moment of the preparation of this document, some others disappeared after some period of operation.

It looks reasonable to take advantage of the existing work and not to replicate what is already done. There are different ways to take advantage of existing webs and platforms:

- Including links to the web pages as external references.
- Linking databases or reading information from third parties webs.
- Supporting one existing web.

The decision on how to interact with other webs depends on factors like the role of the web, the institution that is going to publish and manage it, etc.

According to the experience of some web developers on capacity building, maintenance costs are high and this is a critical point for the success of the project, being some projects stopped some time after the beginning due to the lack of funding for maintenance.

Some examples of existing webs:

REEEP (Renewable Energy & Energy Efficiency Partnership).

This web page (see figures 3, 4, 5 and 6) was operational for some period under REEEP web page (http://www.reeep.org/) but due to the lack of funds for the maintenance it had to be closed. It included up to 600 entries (educational offers).

REEEP has shown interest in a cooperation with MEF initiative.

Figure 3. Main screen of REEEP web page on renewable energy and energy efficiency.

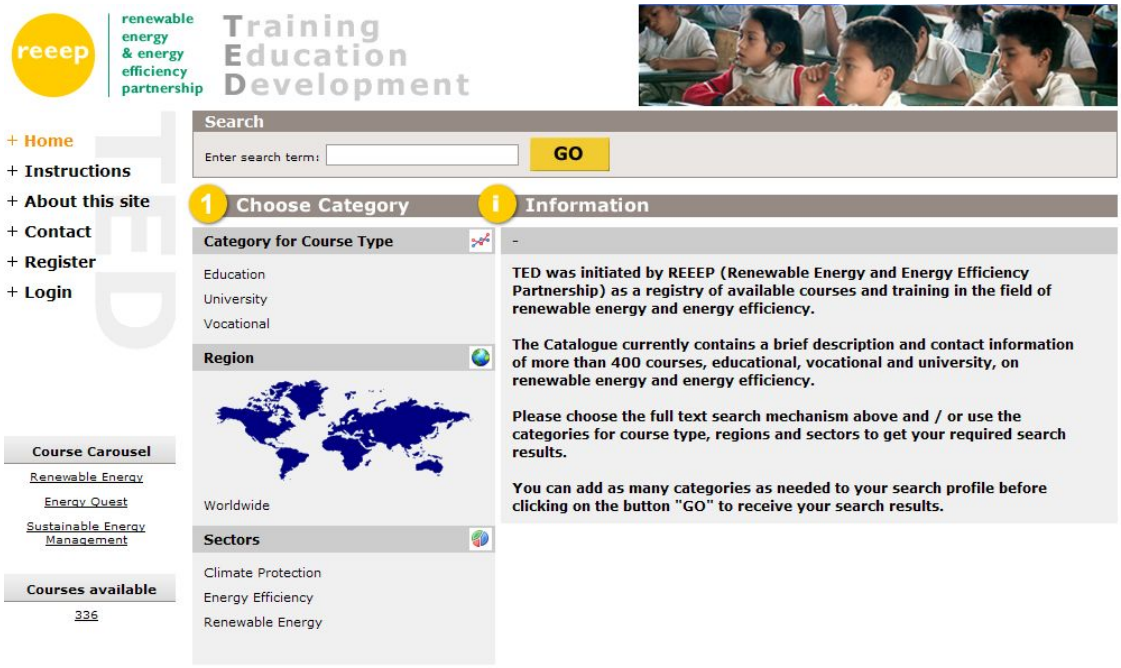


Figure 4. Example of search.

Figure 5. Example of search results.

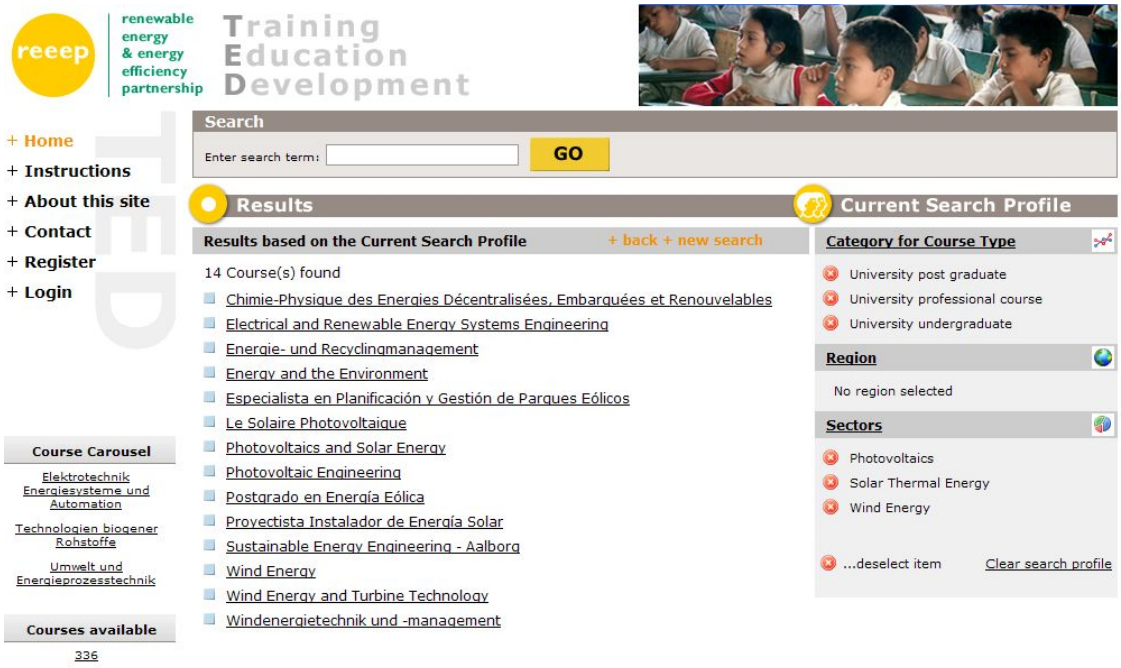


Figure 6. Example of course details.

US Department of Energy (DOE)

The web page of DOE (http://www1.eere.energy.gov/education/educational_professional.html) includes database of courses and training offers inside and outside US.

Figure 7. DOE web page on Energy efficiency and renewable energy.

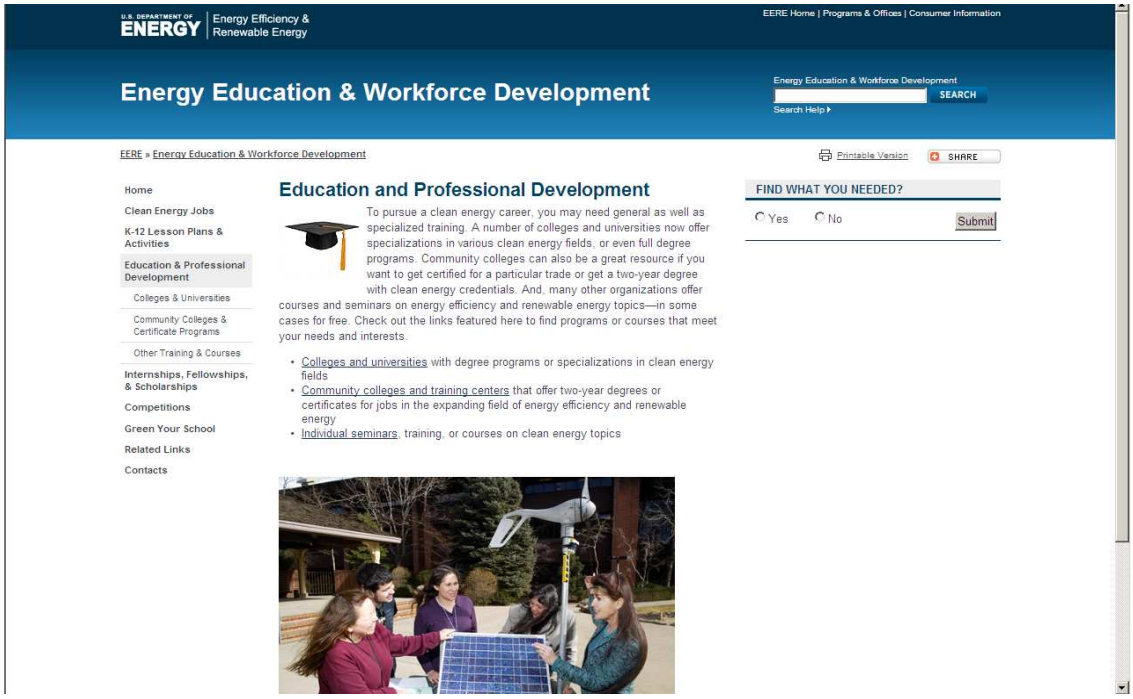
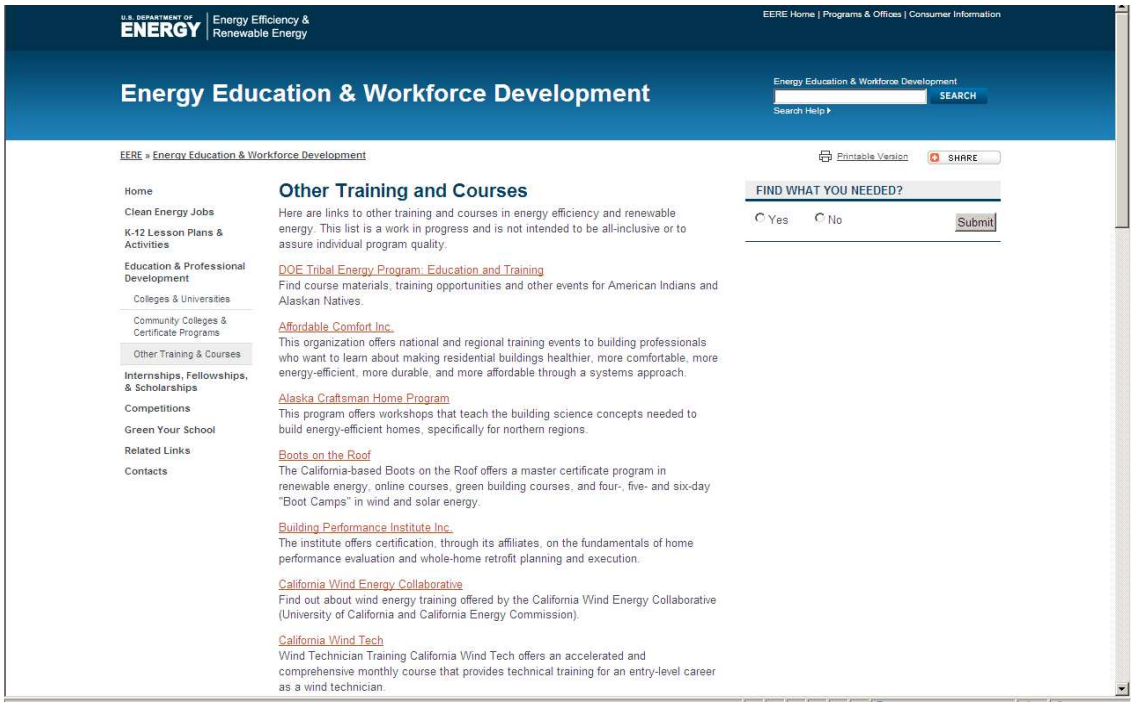


Figure 8. Example of search result.



Consortium for Education in renewable Energy Technology (CERET)

Education in renewable energies in the US.

Figure 9. CERET web page on renewable energy education.