Final Report

Project: PROMITHEAS – 4

Period 1.1.2011 – 31.12.2013

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4.1 Final publishable summary report

Executive summary

The aim of the project (PROMITHEAS – 4) was to support countries with emerging economies (Albania, Armenia, Azerbaijan, Bulgaria, Estonia, Kazakhstan, Moldova, Romania, Russian Federation, Serbia, Turkey and Ukraine) to develop and implement effective adaptation / mitigation policy portfolios with regard to post – 2012 agreement.

PROMITHEAS – 4 was based on the following four pillars, i) Intensive knowledge transfer, ii) Development of a reliable data bases for all beneficiary countries, iii) Development and evaluation of Climate change Mitigation/Adaptation policy portfolios, iii) Intensive and structured policy dialogue with policy makers and market stakeholders at national and regional level and iv) Dialogue with international partners.

It proved to be very helpful the role of the Permanent International Secretariat (PERMIS) of the Black Sea Cooperation Organization (BSEC) that facilitated the dissemination of all PROMITHEAS – 4 reports to the governments of all twelve member countries and participated to all international activities of the project recognizing the contribution of EU – FP7 in addressing these issues in the broad region.

The outcomes of PROMITHEAS – 4 show that although there is more or less acceptance of the need among the beneficiary countries to promote RES there is not an adequate understanding of the need and the benefits that they may emerge for them from the development and implementation of robust Climate Change Mitigation Policies.

As a consequence of this situation, most of the countries will face difficulties to participate actively in a post 2015 (COP21 Paris) international legal instrument, unless additional efforts and resources will be allocated to them to increase their knowledge and evidence base.

Further to that there is a considerable lack of understanding for developing adaptation policies that should be faced by the relevant governments.

Concluding the EU FP7 incentive to launch PROMITHEAS - 4 in the region has had a positive impact in the efforts to increase the awareness on the Climate Change Mitigation/Adaptation policy issues. It has contributed to the knowledge transfer process and has developed a useful evidence base for further incentives that are necessary to be undertaken, by policy makers and market stakeholders, especially in the context of the emerging Framework for Various Approaches, the New Market mechanisms, the National Appropriate Mitigation Actions and the recognized need by the countries of the region to converge with the EU policies towards 2030.

Summary description of project context and objectives

European Union and the international community were striving to set a global post-2012 agreement under the United Nations Framework Convention on Climate Change. The implementation of this agreement should be ensured on a sound scientific knowledge base to which developing countries and/or emerging economies will participate.

The aim (main objective) of this project was to support the developing countries and emerging economies (Albania, Armenia, Azerbaijan, Bulgaria, Estonia, Kazakhstan, Moldova, Romania, Russian Federation, Serbia, Turkey and Ukraine) in developing and implementing effective adaptation / mitigation policy portfolios with regard to post – 2012 agreement.

The development of this scientific knowledge base, in the aforementioned countries, was achieved by transferring the necessary knowledge to human resources on national level, that were trained accordingly and they got provided with the appropriate research infrastructure and skills, allowing them to self-function in their countries for the

development and implementation of the appropriate policy portfolios for adaptation/mitigation actions.

In this framework, the concept of this proposal was the identification, development, transfer, implementation, evaluation and dissemination of the necessary knowledge and of the research needs and gaps that should be overcamed, in order scientists of those countries to be in a position to support their governments and decision makers, in developing and implementing policy portfolios for effective adaptation/mitigation measures.

The aim's achievement was based on the following work packages, corresponding to the project's main objectives, *Evaluation of available data and information* (WP1), *Choice and implementation of models* (WP2), *Scenarios and policy portfolios* (WP3), *Evaluation of policy portfolios* (WP4), *Prioritization of research gaps and needs* (WP5), *Dissemination* (WP6).

The overall strategy was based on the Development, Transfer, Evaluation and Implementation of knowledge, towards high quality personnel from the aforementioned countries, while the research needs and gaps were identified and registered. A Steering Committee and a Scientific Committee supervised the quality of knowledge transfered. The knowledge transfer (training) included a combination of tele-teaching and in-site seminar plus the provision of the necessary means (software licenses, etc).

In order to fulfill the aforementioned aim, the following Science & Technology objectives were set:

1. **Evaluation of available data and information:** The structuring of any type of climate policy scenarios for developing and/or emerging economies - individually or as a group - through models requires a sound scientific knowledge of data and information. The quality and the quantity of the data, the credibility and affordability of the information are elements that scientists, researchers and policy advisors seek so as to proceed, design and assess different policy options. Through the evaluation of the available data and information coming from the developing countries and/or emerging economies, the project tried to: i) identify and map the existing sources of data and information; ii) evaluate the reliability of both the collecting and the receiving data and information; iii) identify the obstacles in collecting raw data and in producing homogenous types of data as required by international entities working in climate policy issues (IPCC, UNFCCC, UTCE, EEA and others) and iv) establish a standardized procedure for this evaluation regarding developing countries and/or emerging economies.
2. **Usage of appropriate models for developing countries and/or emerging economies**: The development of a scenario depends on the model, the initial set of conditions and the reliability of the input data. Different models may provide different and sometimes contradicting outcomes. A careful choice of the most suitable models allowed the development of compatible scenarios and policy portfolios. The project identified the models that could be used, by the participating developing countries and their economies and could be able to produce reliable scenarios. Through a number models considered (ENPEP, LEAP, MARKAL, MESSAGE, MERCI), LEAP was selected, by taking into consideration the available data from the participants countries. Studies, special editions and training mechanisms weree foreseen, so that all participants acquired the same knowledge base in using the selected model for exploring scenarios in climate change policy.
3. **Development of scenarios – policy portfolios**: Three scenarios (Business-As-Usual, Optimisitc and Pessimistic) were developed for each participating country. Each one of the 36 developed scenarios was a mix of adaptation, mitigation and development policy options, developed according to each participating developing country and economy. Each participant ran the models at which they were trained and developed scenarios

including adaptation/mitigation actions, based on the national framework of their country.

4. **Evaluation of policy portfolios:** All developed scenarios were evaluated against a set of criteria that reflected the combination of *social, economical and environmental requirements*. The evaluation aimed to support the implementation of a post-2012 climate change agreement in these countries and economies, by identifying the policy portfolios that lead to effective adaptation/mitigation actions. Based on these evaluation outcomes, the scenarios were corrected accordingly.
5. **Prioritization of research gaps and needs:** Through each one of the steps of the described knowledge transfer chain, the project identified the research needs and gaps that prevent the exploration of climate change policy scenarios and attemped to link them with EU and international funding programs. Through the evaluation of available data and information, and policy portfolios, along with conferences and meetings that involved national stakeholders, the project was be able to identify and prioritize them respectively, and concludes with an inventory.
6. **Dissemination.** The selection of partners allowed the coverage of all types of emerging economies (low income, lower middle income and upper middle income) and provided a wide geographical coverage. Apart from the conventional dissemination procedures (Newsletter, Website, editions, scientific articles, Conference) the hard core of this objective was the involvement and acquaintance with the project's outcomes of the 12 governments of the Black Sea Economic Cooperation (BSEC) Organization in both national and regional level (Ministerial meetings, working groups, parliamentary meetings, Business council, Ad hoc visits).

A description of the main Scientific &Technological results/ foregrounds.

S&T objective: ***Evaluation of available data and information***	Presentation The structuring of any type of climate change policy scenarios for emerging economies - individually or as a group - through models requires a sound scientific knowledge of relative data and information. The quality and the quantity of the data, the credibility and affordability of the information are elements that scientists, researchers and policy advisors seek so as to proceed, design and assess different M/A policy options. Expected and performed work The expected work for achieving this S&T objective was outlined through the objectives of WP1. These were: i) Provide an overview of international procedures and standards in collecting and reporting data and information for the development of M/A policy portfolios; ii) Map national procedures, sources, data and information and offer an understanding of the relevant state-of-the-art in the participating emerging economies; iii) Contribute in the knowledge transfer procedures (training, implementation, dissemination); iv) Collect the aforementioned data and information and prepare a data base for each participating emerging economy; v) Identify and link research gaps and needs, associated with the content of WP1, with EU and international funding programs. For the evaluation of the available data and information coming from the emerging economies, the consortium: Identified and mapped the existing sources of data and information for the participating emerging economies. The relevant detailed information is included in: i) Deliverable D.2 - Procedures, sources and data for M/A policy portfolios (specifically in the national reports of the second part and in the database); ii) Deliverable D.6 – Prioritization of research gaps and needs. This report includes information about which type of data are not available per country. Tables 1 and 2 summarize the situation for the participating in PROMITHEAS-4 countries. Evaluated the reliability of both the collecting and the receiving data and information; The partners devoted efforts and time for this objective in understanding from which sources they needed to collect the data, if the data reflected the definitions for which they were needed for and which ways to adopt for demonstrating the reliability of the used data. Identified the obstacles in collecting raw data and in producing homogenous types of data as required by international entities working in climate policy issues. The partners devoted efforts and time for this objective so as all data to have the same measurement units, refer to the same common definitions and be presented in common format. Emerging economies. Only data from official sources either national or international were used (Table 1). All data were evaluated before included in the database, while for each set the source needed to be mentioned and checked. A second point of checking was when setting up the dataset of the model for each country and looking at the measurement units and

	the correctness of the data. A third point of checking was after running the model and looking for inconsistencies in the historical data. This procedure was followed for all countries. This objective was achieved through Work Package 1 (the bulk of work was executed mainly under this WP), WP5 and WP6. Difficulties in achieving the objective The achievement of this particular S&T objective was difficult and demanding. The availability and credibility of the national data that were needed for using a model were considered as an obstacle that had to be taken into consideration. All Ad hoc Group members agreed during the kick-off meeting of the project (March 2011) that probably not all participating emerging economies would have the same level of detailed data. The work presented delays during execution. These tasks proved of variable difficulty since not all the beneficiaries could collect and provide the necessary data nor they have had the necessary skills. Serious arguments had been discussed about the quality of the data provided by the partners, since in many cases initially the sources were not provided, or the sources were not official. Many partners admitted that they faced difficulties on accessing the requested data, and their comments were used as input to the relevant task and to the respective deliverables. Finally, there was a variable gap concerning the existence of reliable time series of data among the beneficiary countries. Established a standardized procedure for this evaluation regarding Main S&T outcomes linked with the objective The consortium fulfilled the S&T objective by concluding with: A database consisted of the datasets of 12 emerging economies (Deliverable D.2 - Procedures, sources and data for M/A policy portfolios). All data were checked thoroughly before being included in it, while for each set of data the source was definitely mentioned. Because of the procedure that was followed, the database is reliable, it can be updated and supplemented with additional data any time in the future and used for the same model or other models so as to develop M/A policy mixtures according to the needs and the priorities of the country. Identified needs and gaps for data used in climate change policy issues (Deliverable D.6 - Prioritization of research gaps and needs).
S&T objective: ***Usage of appropriate model(s) for emerging economies***	*Presentation* The development of a scenario depends on the model, the initial set of conditions and the reliability of the input data. Different models may provide different and sometimes contradicting outcomes. A careful choice of the most suitable models allows the development of compatible scenarios and M/A policy portfolios. *Expected and performed work* The expected work for achieving this S&T objective was outlined through the objectives of WP2 which were: i) To present models in use for developing M/A policy portfolios; ii) to identify the most appropriate models for developing reliable scenarios in the participating emerging economies; iii) to train scientists and decision makers from those countries

	in using models for developing M/A policy portfolios and iv) to identify research needs and gaps related with the content of this WP. The partners needed to identify the model that could be used by the participating emerging economies and that was able – according to nine (9) criteria - to lead to reliable scenarios. The following models were considered and evaluated against those criteria: MARKAL/TIMES, ENPEP-BALANCE, MESSAGE, LEAP, IMAGE and MERCI (*Deliverable D.3 - Choice and implementation of Models for M/A policy portfolios*). One model was serving better the agreed requirements, the LEAP model. Overviews, training and dissemination mechanisms were foreseen so that all participants acquired the same knowledge base in using the selected model for exploring scenarios in climate change policy. **This objective was achieved through WP2 (mainly), WP5 and WP6.** *Difficulties in achieving the objective* The selection of the appropriate model was discussed during the kick – off meeting of the project (March 2011). The main arguments were about the required quantity and quality of the data for running the model; what model would be appropriate both for mitigation and adaptation policy mixtures and with which knowledge transfer means all partners would be in a position to use it. All evaluated models presented difficulties for fulfilling fully the task of developing adaptation policy options. *Main S&T outcomes linked with the objective* The consortium fulfilled the S&T objective by concluding with: 1. A review of the used models (up to April 2011) for developing mitigation/adaptation policy scenarios. The review includes presentation of their weaknesses and strengths and justification why the selected model was appropriate for the PROMITHEAS-4 case (*Deliverable D.3 - Choice and implementation of Models for M/A policy portfolios).*
S&T objective: ***Development of scenarios – M/A policy portfolios***	*Presentation* For each participating beneficiary partner, three scenarios (Business As Usual, optimistic, pessimistic) were developed with each one being a mix of adaptation, mitigation and development policy options. These scenarios took into account the main scenario assumptions of the Fifth Assessment Report (AR5) (Pathways for mitigating climate change) *Expected and performed work* The expected work for achieving this S&T objective was outlined through the objectives of WP3 which were: i) To explore reliable climate change policy scenarios that would allow the identification of effective M/A policy portfolios under a post 2012 agreement; ii) to train scientists and decision makers in developing scenarios and M/A policy portfolios; and iii) to identify research needs and gaps related to the content of this WP. Trained persons from each project participant would run the selected model so as to develop these scenarios that would conclude to effective M/A actions based on the national framework of each country. During the implementation of the project this part of work turned out to be its second most important component after the structuring and filling of the database. A common methodology was applied so as to conclude in

	policy mixtures[1], structured with the same concept and evolved in time under the same set of key assumptions, but differentiated according to the respective national framework. The general framework of two out of the four Representative Concentration Pathways (RCP) that the Intergovernmental Panel on Climate Change (IPCC) had been working on regarding emission scenarios and possible socio-economic development pathways, that of RCP3-PD and RCP8.5, was taken into consideration. So, the three scenarios that were developed were: the Business-As-Usual (BAU), the Optimistic (OPT) and the Pessimistic (PES). RCP 8.5 was used for the development of the PES scenario and RCP3-PD for that of OPT since each one represented the lower and upper limit of emission scenarios respectively. The objectives of the BAU scenario were: i) reduction of GHG emissions that the country is able to achieve through its implemented climate change policies (compared to the amount of GHG emissions of a previous year[2]); ii) adaptation of the country to the already observed climate change impacts. The scenario has its own policy mixture structured by the national M/A Policy Instruments (PIs) that were set into force before 31 December 2010. It served as the reference Policy Mixture against which the outcomes of the other ones were compared using two research tools, the LEAP model and the AMS evaluation method. The objectives of the OPT scenario were: i) maximum reduction of GHG emissions that the country is able to achieve (compared to those of a previous year or to those of BAU for a certain year in the future) through stringent climate policies; ii) adaptation of the country to mild climate change impacts. It has an enhanced M/A policy mixture that the country may implement up to 2050 by supporting: i) the introduction of efficient technologies in almost all sectors targeting to the maximum reduction of GHG emissions i.e. maximum exploitation of the national potential in Energy Efficiency (EE) and Renewable Energy Sources (RES); ii) the necessary infrastructure for adaptation towards the minimum – in size and extent - expected climate change impacts. It is structured by: i) the already implemented M/A Policy Instruments (PIs) (included in the policy mixture of BAU); ii) the M/A PIs that the country had set into force after 1st January 2011; iii) additional PIs (planned and possible ones in line with the EU climate change policy that were adjusted to needs and priorities of the examined country). The objectives of the PES scenario were: i) the minimum reduction of GHG emissions that the country is able to achieve (compared to those of a previous year or to those of BAU for a certain year in the future) through its implemented and already planned climate change policies; ii) the adaptation of the country to unfavorable climate change impacts. It has a restricted M/A policy mixture that the country may implement up to 2050 without exploiting fully the national potential in EE and RES and by facing the worse expected impacts of climate change. The minimum exploitation

[1] During the execution of PROMITHEAS-4 the partners concluded that it was more accurate to use the term policy mixtures instead of policy portfolios that was used in Annex B of the Grant Agreement.

[2] The availability of the historical data determined the selection of the previous year for each country.

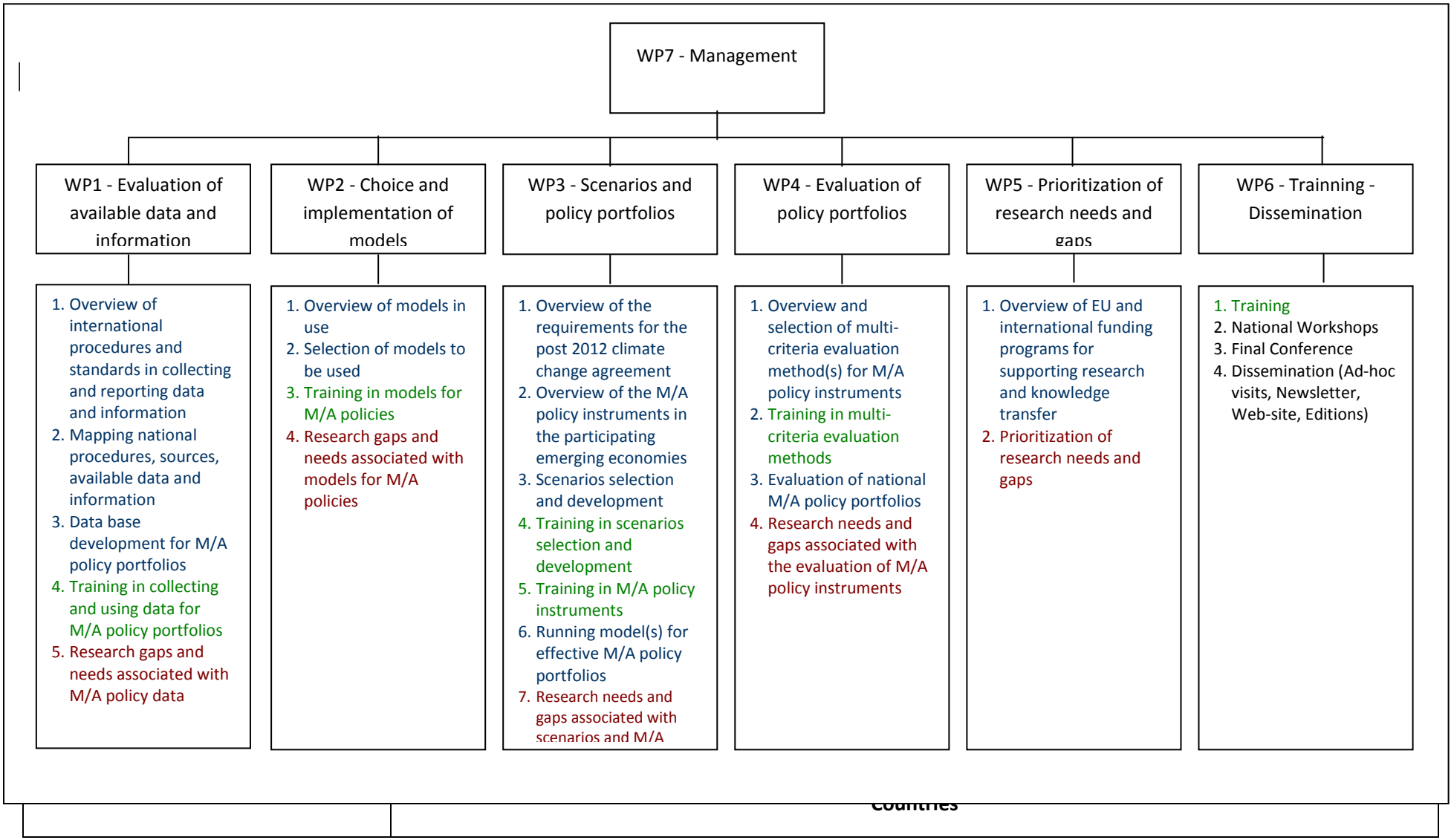
	of EE and RES is restricted to possible technological options for sectors with the highest national potential in EE and the most promising for the country types of RES. It is structured by: i) the already implemented M/A Policy Instruments (PIs) (included in the policy mixture of BAU); ii) the M/A PIs that the country had set into force after 1 January 2011 (described in OPT policy mixture) and iii) no other additional PIs apart from those already decided to be implemented and in line with the EU climate change policy; the EU PIs were adjusted to the needs and priorities of the country under this scenario. The development - under each scenario - of the key assumptions regarding the evolution of the most important drivers was determined considering the special respective characteristics of the examined countries. Simultaneously a common approach for all countries was adopted. More specifically, the time evolution of: i) population was based on projections of the Department of Economic and Social Affairs of the United Nations; ii) National real GDP was based on projections of the International Monetary Fund (IMF). Depending on the availability of historical data the growth of the variable "Final energy intensity" or "Total energy" of an economic national sector was linked to the growth of the "GDP real". The use of "GDP real" over "GDP nominal" was preferred for removing the effect of inflation and being able to compare the outcomes among all countries. Available information and data about national PIs were incorporated into the respective key parameters, factors and functions of each developed LEAP model. Details about the development of the scenarios per country are presented in *Deliverable D.4 - M/A Scenarios and policy portfolios.* Each national report presents first the mitigation options and the adaptation needs that the country has. Then each of the three policy mixtures is presented in detail concerning its general framework, content and main characteristics. The description of each policy mixture is followed by the description of its respective key assumptions. Considerable needs and gaps were identified and quoted during the execution of this objective (*Deliverable D.6 - Prioritization of research gaps and needs*). Table 2 summarizes the identified needs and gaps. **This objective was achieved through WP3 (mainly), WP5 and WP6.** *Difficulties in achieving the objective* The achievement of this particular S&T objective was also difficult and demanding one. PROMITHEAS-4 scenarios were based on: RCP3-PD and RCP8.5. The released information provided the basic framework of each RCP and a different approach in their description compared to the previous generations of IPCC scenarios. In the previous generations the approach was to focus on the presentation of the socio-economic development pathway that was expected to lead to a certain aggregate amount of GHG emissions in the atmosphere. In the RCP the approach was to focus on the presentation of possible aggregate amounts of GHG emissions in the atmosphere and how they result based on climate change impacts and in less extent on the possible socio-economic situation that is possible to lead to that amount. Although the consortium took into consideration the adaptation needs, the adaptation policy part was not developed equally with that for

	mitigation. The obstacles were: the lack of the necessary data and the lack of the appropriate information about the policies that the country is planning to adopt. There was also lack in finding research work that links adaptation policy options with mitigation choices and climate change impacts oriented specifically for the emerging economies of the project. Two more obstacles needed to be overcome. One was to find the necessary information about the key assumptions for mitigation and adaptation policy options. The lack of research work was for most of the emerging economies the main problem (Tables 2 and 3). The second was to adopt a common methodology for all twelve partners, but simultaneously to allow the incorporation of the specific characteristics that each country has for its climate change policy. Because of the encountered research needs and gaps and the additional efforts to establish solid knowledge transfer procedures, no other scenarios were developed. A more complete understanding of the climate change policy options that an emerging economy has, would have been with the inclusion of six (6) more scenarios with the combinations "low population growth – high GDP growth" and "high population growth – low GDP growth", according to the socioeconomic frameworks presented in the IPCC pathways (new generation of IPCC scenarios). *Main S&T outcomes linked with the objective* The consortium fulfilled the S&T objective by concluding with: 1. Presentation of commonly developed M/A policy scenarios. This is important because for some of these countries (i.e. Azerbaijan) there are no such scenarios (*Deliverable D.4 - M/A Scenarios and policy portfolios*). 2. 36 comparable policy mixtures – 3 for each of the twelve emerging economies (*Deliverable D.4 - M/A Scenarios and policy portfolios*). 3. Identified needs and gaps for developing M/A policy mixtures in emerging economies (*Deliverable D.6 - Prioritization of research gaps and needs*). Training procedures for climate change policy issues (*Deliverable D.7 - Training material*).
S&T objective: ***Evaluation of policy portfolios***	*Presentation* M/A policy portfolios of each developed scenario were to be evaluated against a set of criteria that reflects *social, economical and environmental requirements*. The evaluation aimed to support the implementation of a post-2012 climate change agreement in these countries by identifying the effective M/A policy portfolios. At the end the proposed effective policy portfolio for each emerging economy were to be discussed with decision makers of the public and private sectors during national workshops; would be compared and evaluated with similar portfolios of other countries. *Expected and performed work* The expected work for achieving this S&T objective was outlined through the objectives of WP4 which were: i) To identify the most effective policy portfolios for M/A actions; ii) to train scientists and decision makers from the public and private sector in using evaluation for climate change policy issues; iii) to identify research needs and gaps

	associated with the evaluation of M/A policy portfolios. Each evaluation - using the multi-criteria evaluation method AMS – concluded with the most appropriate policy mixture out of the three developed ones for each emerging economy (Table 5). The analytical presentation of the evaluation for each country is presented in *Deliverable D.5 - Evaluation of M/A policy portfolios.* Since the evaluation was performed under the same set of criteria and for policy mixtures that were developed with the same concept, the results are comparable. For all cases the OPT policy mixture is the most effective one compared to the other two. However, its successful implementation requires in the majority of the countries an improved implementation network. Table 5 presents the evaluation outcomes about the most efficient policy mixture for each country. The evaluation outcomes were presented and discussed during the national workshops and the Final Conference (*Deliverable D.10 – National Workshops, Deliverable D.11 – Final Conference)*. **This objective was achieved through WP4 (mainly), WP5 and WP6.** *Difficulties in achieving the objective* Partners had no experience in using multi-criteria evaluation methods and not all were able to understand and follow up with the respective module during the e-class training procedure. The available information that could be used for the evaluation was limited for almost all emerging economies (*Deliverable D.6 - Prioritization of research gaps and needs*). One of the partners does not have a complete and detailed evaluation. Table 4 summarizes the research needs and gaps for this objective. *Main S&T outcomes linked with the objective* The consortium fulfilled the S&T objective by concluding with: 1. Review about the multi-criteria evaluation methods that were used (up to August 2011) for climate change policy issues (*Deliverable D.5 - Evaluation of M/A policy portfolios).* 2. Evaluated policy mixtures under a common framework for all. The structure and the presentation of the evaluation outcomes allow comparisons among the countries. (*Deliverable D.5 - Evaluation of M/A policy portfolios*). 3. Identified needs and gaps for evaluation about climate change policy issues (*Deliverable D.6 - Prioritization of research gaps and needs*). Table 4 summarizes the outcomes.
S&T objective: ***Prioritization of research needs and gaps***	*Presentation* Through each one of the steps of the described knowledge chain, the project was to identify research needs and gaps that prevented the exploration of climate change policy scenarios and to link them with EU and international funding programs. Through the evaluation of: i) available data and information, and ii) policy portfolios along with national workshops that will involve national stakeholders, the project would be able to identify and prioritize them respectively and conclude with an

	inventory. *Expected and performed work* The expected work for achieving this S&T objective was based on the objectives of WP5 which were: i) To synthesize the outcomes of the respective tasks in the previous WPs; ii) to prioritize the identified research needs and gaps and iii) to link them with EU and international funding programs supporting research and knowledge transfer. All partners contributed in quoting the research needs and gaps that they encountered during the execution of the project. These are presented in details in Deliverable *D.6 - Prioritization of research gaps and needs.* Table 2 summarizes the outcomes. **This objective was achieved through WP5 and WP6.** *Difficulties in achieving the objective* Partners had initially difficulties in understanding what policy needs are and what research needs and gaps are. *Outcomes linked with the objective* The consortium fulfilled the S&T objective by concluding with: 1. Synthesis of the outcomes and presentation of EU and international funding programs that could be used to face such needs and gaps (*Deliverable D.6 - Prioritization of research gaps and needs*). The situation is reflected in Tables 2, 3 and 4.

Figure 1: Presentation of Work Packages and their tasks. There are four groups of activities for: i) Policy portfolios development (blue color); ii) Knowledge transfer (green color); iii) Research needs and gaps (dark red color) and iv) Socio-economic impact (black color).



Types of sources	Albania	Armenia	Azerbaijan	Bulgaria	Estonia	Kazakhstan	Moldova	Romania	Russia	Serbia	Turkey	Ukraine
National sources												
National Statistical Services	X	X	X	X	X	X	X	X	X	X	X	X
Ministries	X	X	-	X	X	X	X	-	-	X	X	X
Banks	-	-	-	X	-	-	X	X	-	-	X	-
Laws	X	-	-	-	-	-	X	X	-	-	X	-
National agencies/Commissions	X	X	-	X	X	-	X	-	-	X		X
Other official institutes	X	X	-	X	X	-	X	X	-	X	X	X
International sources												
UN	-	-	-	X	-	-	-	-	X	-	-	-
UNFCCC	X	-	X	-	X	-	-	X	-	X	X	-
World Bank	X	X	X	-	-	-	X	-	-	X	-	X
Eurostat	-	-	-	X	X	-	-	X	-	-	-	-
IEA database	-	X	-	-	-	X	-	X	X	-	-	X
BP database	-	-	X	-	-	-	-	-	-	-	-	-
World Energy Council, National Committee	-	-	-	-	-	-	-	-	-	-	X	-

Table 2: General needs and gaps (N – quoted needs, G^+ - considerable amount of gaps, G^o – moderate amount of gaps, G^- limited amount of gaps, G – not clear picture, (-) no quoted information for this category/no needs, no gaps).

	Countries											
	Albania	Armenia	Azerbaijan	Bulgaria	Estonia	Kazakhstan	Moldova	Romania	Russia	Serbia	Turkey	Ukraine
I. Established national procedures, sources and data for M/A policy mixtures												
GHG inventory[3]	N	N, G^+	N,G^+	N	-	N, G	N, G^o	N, G^-	N	N, G	-	N
Reporting	N, G	N	N	N	-	N, G	N, G^o	N	N	N, G	N	N
Verification	N	N	N	N	-	N, G	N, G^o	N	N	N, G	N	N
II. Availability of historical data (1990-2010) as basis for scenario development												
Demographics	-	-	-	-	G^-	G	-	-	-	-	-	-
Economy	G^o	-	-	G^-	G^o	G	G^-	N	N	-	G^o	Go
Climate	G^+	N, G	G^+	G^o	G^o	N, G^+	G^-	N	G^+	-	N, G^+	N, G^+
Policies and measures	-	N, G	N, G^+	N	G^-	N, G	G	G^o	G	N	G	N
Energy demand in all economic sectors	G^+	G^+	G^+	G^o	G^o	N, G^+	N, G^+	G^o	N, G^+	N, G^+	G^-	N,G^+
Energy transformation (supply) per sources	G^+	G	G^+	G^o	G^+	N, G^+	N, G^+	G^o	N, G^+	N, G^+	G^-	N,G^+

[3] Albania, Armenia, Azerbaijan, Moldova and Serbia are Non-Annex I Parties and the national GHG inventory is a portion of their National Communication. Non-Annex I Parties will now be required to move from a system based on temporary arrangements, which delivers the national GHG inventory together with the National Communication without any time constraint, to a permanent system which should deliver every two years and the supplementary information related to Nationally Appropriate Mitigation Actions (NAMAs) and likely REDD+. Only Moldova has submitted a GHG inventory (https://unfccc.int/ghg_data/items/3962.php)

and others												
III. Availability of												
Modeling tools	N	N	N, G^{+}	N	N	-	-	-	N	-	-	N, G
Information for developing M/A policy mixtures	N,G^{+}	N,G+	N,G^{+}	N,G^{o}	N,G^{o}	N, G^{+}	N, G^{+}	N, G^{+}	N,G^{+}	N, G	N,G^{o}	N,G^{+}
Multi-criteria evaluation methods	N, G^{+}	N, G+	N,G^{+}	N	N, G^{o}	N, G^{+}	N, G^{+}	-	N, G^{+}	N	N,G^{o}	N, G

Table 3: Additional general needs and gaps.

	Countries											
	Albania	Armenia	Azerbaijan	Bulgaria	Estonia	Kazakhstan	Moldova	Romania	Russia	Serbia	Turkey	Ukraine
No access to information	X	X	X			X			X			X
Language barrier		X	X			X	X		X	X	X	X

Table 4: Research needs and gaps for performing evaluation of M/A policy mixtures

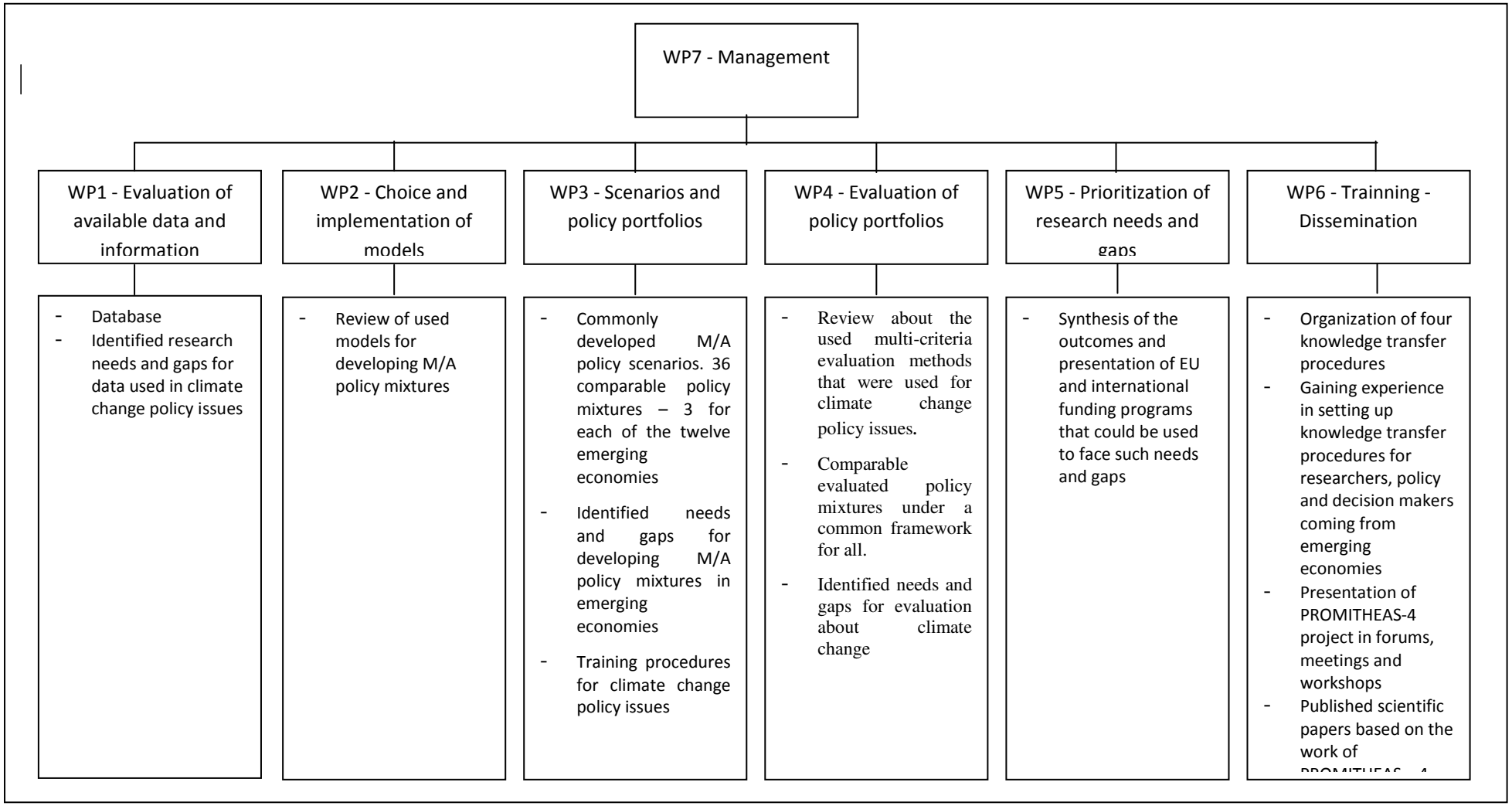
	Albania	Armenia	Azerbaijan	Bulgaria	Estonia	Kazakhstan	Moldova	Romania	Russia	Serbia	Turkey	Ukraine
Inadequate national implementation network	X	X	X			X	X		X	X	X	X
Non-existent or limited published research work on mitigation and adaptation issues	X	X	X	X	X	X	X	X	X	X	X	X
Use of energy models and policy evaluation methods	X	X	X	X	X	X	X	X	X	X	X	X
Inadequate background	X	X	X	X	X	X	X	X	X	X		X

Table 5: Evaluation outcomes (S – Strength, when it received the higher score, more than double compared to the one that ranked second, W – Weakness, when it received the lowest score or equally the lowest with another one)

	Countries											
	Albania	Armenia	Azerbaijan	Bulgaria	Estonia	Kazakhstan	Moldova	Romania	Russia	Serbia	Turkey	Ukraine
Most effective M/A policy mixture	OPT	OPT	OPT	OPT	OPT	-	OPT	OPT	OPT	OPT	OPT	OPT
Criteria/Sub-criteria						-						
Direct contribution to GHG emission reductions	S	-	-	-	S	-	-	S	S	S	S	S
Indirect environmental effects	S	W	S	-	-	-	W	S	-	-	S	S
Environmental performance - A	**S**	**-**	**-**	**-**	**S**	**-**	**-**	**S**	**S**	**S**	**S**	**S**
Cost efficiency	S	S	S	-	-	-	S	S	S	S	S	S
Dynamic cost efficiency	-	S	-	-	S	-	-	S	-	**-**	-	**-**
Competitiveness	S	S	-	-	S	-	-	S	-	S	-	**-**
Equity	S	-	S	-	S	-	-	S	S	S	S	S

Flexibility	-	-	-	W	-	-	-	-	-	-	-	-
Stringency for non-compliance	-	-	-	W	-	-	-	-	-	-	-	-
Political acceptability - B	**S**	**S**	**S**	**-**	**-**	**-**	**S**	**S**	**-**	**S**	**S**	**S**
Implementation network capacity	W	W	W	-	-	-	W	-	W	W	W	W
Administrative feasibility	W	W	-	-	-	-	-	-	W	W	-	W
Financial feasibility	-	W	-	S	-	-	-	S	-	-	-	-
Feasibility of implementation - C	**-**	**W**	**-**	**-**	**-**	**-**	**-**	**-**	**W**	**W**	**S**	**W**
Total	**S**	**-**	**-**	**-**	**S**		**-**	**S**	**-**	**S**	**S**	**S**

Figure 2: Presentation of S & T outcomes per Work Package



Potential impact (including the socio-economic impact and the wider societal implications of the project so far)

The aim (main objective) of this project was to support the developing countries and emerging economies of the beneficiary partners, in developing and implementing effective adaptation / mitigation policy portfolios with regard to post – 2012 agreement.

To achieve this aim, the following objectives were set: Evaluation of available data and information, usage of appropriate models for developing countries and/or emerging economies, development of scenarios – policy portfolios, evaluation of policy portfolios, prioritization of research gaps and needs and finally, the dissemination.

During the 3 – year period of the project, the beneficiary partners, in cooperation with the task leaders, collected data information fron national official sources. Based on the available data and information, it was conclused that the best software tool to be used was the LEAP. The data and information were used by each beneficiary partner's team to develop three scenarios (business as usual, optimistic and pesimistic) that included specific policy mixtures and through the LEAP sofwtare; each beneficiary partner had results for the three national scenarios. Further to that, the AMS multicriteria method of evaluating policy mixtures was used and in each country, the best policy mixture, based on the three scenarios, was occurred.

While developing the national policy mixtures and scenarios, certain scientific gaps and needs were observed by the beneficiary partners, and they were included in relevant reports, intending not only to show the present status, but also to use those reported needs and gaps as a guide for future discussions and solutions.

All the reports, the scenarios, the policy mixtures and even the scientific needs and gaps observed, were disseminated through the BSEC to the relevant Ministries (of energy, environment, forestry, development, etc) of each beneficiary partner's country, with the request of commenting the results and supporting the partners by providing updated information, or any other help.

Further to that there was a continuous flow of information to the governments of the beneficiary countries that included presentations to BSEC ministerial meeting, official working groups of the relevant ministries, organization of 12 national conferences, participation in meetings of the BSEC Business Council and the relevant committee of the Parliamentary Assembly of the BSEC countries.

Additionally, through the PROMITHEASnet, scientists and stakeholders all over the world were informed about the outcomes of the PROMITHEAS – 4 project, and had the opportunity to read the reports, from the project's website.

Additional achievements

It is worth quoting the additional successful activities that the consortium managed to perform apart from the aforementioned S&T objectives.

- Establishment of an ad hoc Scientific Committee that was commenting on the draft reports, regarding the quality of the context.
- Development of a tool for policy makers regarding climate change policy issues. The tool named "*The Mitigation/Adaptation Development and Assessment Tool (MADAT)*" has

four (4) main parts: Database, Scenarios, Model, and Evaluation method. Its utilities include: Data and information sources, Policy portfolios development and optimization, Assessment, Monitoring of the policy implementation progress and Comparative analysis on regional scale.

Main dissemination activities and exploitation of results

Energy View of BSEC countries – Climate Change Special Edition	In 2012, the Energy View of BSEC Countries was published, as a Special Edition on Climate Change policies. All twelve BSEC countries and two more, from PROMITHEAS – 4 beneficiary parters were included – Estonia and Kazakhstan. The material of the edition was based on the collected data and information of the partners, on issues of Climate Change policies in their countries. Each chapter was dedicated to one country, following the same strucutre: A message of the relevant national Minister, a country, political and economy profile, the presentation of the national climate change policy, the national energy policy, the conditions of Green Economy in the country and a list of national stakeholders, in the area of energy and climate change. PROMITHEAS – 4 has had undertaken the task to cover existing gaps in this sector and finally, has contributed to the identification of the existing gaps in this crusial, for the development and implementation of international or domestic mechanisms, process. Collecting data and creating the appropirate databases for the development and evaluation of the necessairy scenarios and policy mixtures, proved to be a rather complicated exercise, given the lack of efficient and reliable national databases. It is worth mentioning that, in some of the countries, the ministries were not in position to evaluate the importance of using various scenarios, or to conclude to policy mixtures, after the study of the outcomes of a model. The choice of the less demanding model has facilitated the knowledge transfer on this issue, but it is obvious that this is a remaining weakness for the beneficiaries, in their effort to joing the international community in the post 2020 efforts to mitigate the Climate Change. Hard copies of the edition were disseminated through our partners to national stakeholders and agencies. Further to that, they were disseminated to United Nations headquarters (New York) and to national agencies of the UN in the beneficiaries' countries. The hard copies were also disseminated widly to the relevant governmental working groups of BSEC on Energy and Environment, while it was the reference edition that was disseminated in the Ministerial Meeting of BSEC on Envrionment in Belgrade (2012). Finally, it was disseminated to all nine national and three international conferences, where the outcomes of PROMITHEAS – 4 were presetned. It is also worth mentioning that the edition was set under the auspices of BSEC and it was introduced by the minister of the country in Chair of the BSEC.

National and International Conferences	The beneficiary partners organized, in cooperation with KEPA, nine (9) national and three (3) international conferences, in order to present the national reports on Mitigation/ Adaptation climate change policy mixtures that have developed in the frames of the PROMITHEAS – 4 project, as well as outcomes and conclusions for discussion, along with scientifc problems, needs and gaps that occured, during the development and evaluation process. Ministers, representatives of governmental bodies and UNDP representatives, academicians and national stakeholders were invited and attended the conferences. In most cases, the partners managed to invite stakeholders from their region, upgrading the events into international conferences. Either in English or in their native language with translation into English, these National and International Conferences were hold with great success, active participation and discussions on the presentations and the disseminated reports.

World Wide dissemination and projection of the project outcomes	In the three years duration of the project, the PROMITHEAS – 4 activities and the draft and final reports were disseminated through the Permanent Secretariat (PERMIS) of the Black Sea Economic Cooperation Organization (BSEC) to all twelve governments for comments and information. Special presentations were made in the Governmental Working Groups for Energy and Science and Technology of BSEC (Istanbul), while the project objectives and partial outcomes were presented in three Ministerial Meetings of BSEC countries (Sofia, May 2010; Nafplion, October 2010; Belgrade, April 2012) and in one PABSEC meeting (Ganja, September 2013). Final reports were also disseminated to Chambers of Commerce of BSEC, through the BSEC Business Council. Relevant material (national reports and policy mixtures) were disseminated both in hard copies and in electronic version to the ministries of the BSEC and participants countries, in order, not only to keep the governmental bodies informed, but also to seek for updates and additional information. The United Nations Academic Impact (UNAI) initiative took special interest of the results of the project and asked for a stable communication of the reports, for their information and dissemination. The contacted office was the Department of Economic and Social Affairs, addressing to the Economic Affairs Officer. The project objectives and outcomes were presented in EU, BSEC, Central Asia and Far East (Taiwan) international scientific conferences and the presented papers are already accepted for publishing in scientific journals, with free access. Finally, through electronic newsletters and website updates, academicians, scientists and market stakehoders in all the continents were regullarly updated and informed about the progress, the outcomes and the organized events of PROMITHEAS – 4. Presentation of PROMITHEAS-4 project in forums, meetings and workshops: - National workshop on "*The strengthening cooperation between national institutions working in the field of energy efficiency and climate change*", held in Tirana (Albania April 2011), organized by the Polytechnic University of Tirana; - International forum, held in Almaty (28th October 2011), organized by Al-Farabi University of Kazakhstan; - United Nations Academic Input meeting for sustainable development (15-16 November 2011) in New York, USA.

Knowledge Transfer	Originally, the process of knowledge transfer in the project frame was scheduled to start with an e – class training. The team members of the beneficiary partners, along with any other scientist, interested to participate, would participate in an electronic class with eight (8) modules, related to developing Climate Change policy mixtures. Every week the lecturers provided the participants with material, extra bibliography, exercises and assistance, and at the end, there was an examination period. From the 110 participants who attended the e-class, only the 25 passed successfully the exams and were invited to attend the second part of the scheduled knowledge transfer process, the Case Study Seminar. The Case Study Seminar lasted for one (1) week, and at the end of it, all the participants received Certification of Participation. Due to the research needs and gaps that the consortium encountered from the launching of the project, three (3) unscheduled training procedures were considered as necessary and were organized. An "unscheduled workshop" was organized in Vienna (September 2011) in order to fill the existing knowledge gap about the model that was to be used while a dense "*tailor made"* tele-training network was established previously in an effort to provide the necessary instructions to those who could not respond to their tasks. An "intensive workshop" was organized in Athens (August 2012) for filling in the databases, developing the M/A policy mixtures and evaluating them. In this workshop nine (9) persons - coming from the respective number of emerging economies – participated while an intensive tele-training course supported it. For the remaining three (3) that it was decided that it was necessary to receive additional assistance they participated in an extension of the "intensive workshop" that was organized after the Case Study Seminar (December 2012). In order to achieve an effective knowledge transfer procedure, NKUA – KEPA in cooperation with the beneficiary partners establishment tweleve (12) National Working Groups (one per beneficiary partner). NKUA-KEPA assisted the working groups though constant communication using electronic means, such as teleconference, skype, e-mails and a forum on an ad-hoc, free of charge, approach.

Scientific Needs and Gaps	Through the above described activities and knowledge transfer process, the research needs and gaps listed below were identified as the most important and challenging for future tasks. - Inadequate national implementation network. In most countries of the PROMITHEAS-4 region, there is limited information about climate change policies and especially adaptation. In most countries, there is no information about results of policy implementation. Additionally, the understanding of climate change policies does not always correspond to the understanding laid down in the international documents. The websites of the pertinent authorities contain limited information. - Availability of information in English language. Most of the documents regarding national policies are only in the national languages with no translation, causing related difficulties to foreign researchers accessing them. - Limitations to information access. In many cases, researchers were unable to access existing information. The statistical information (data, policies, policy results, etc.) is available, but cannot be accessed easily or without paying. Further to this, there were observed gaps in the time series of the data in many countries - Inadequate background. The researchers from the region need to get further familiarized with the terms used in climate change policies, the scientific standards applied in EU, the energy modeling tools and the multi-criteria decision analysis methods.

The address of the project public website, if applicable as well as relevant contact details.

http://www.promitheasnet.kepa.uoa.gr/Promitheas4/

Photos from the dissemination and knowledge transfer activities of PROMITHEAS – 4 project

Consortium events

Kick – off meeting – Athens, 2011

2nd Steering Committee – Belgrade, 2012

International Conference – Athens, 2012

Final Conference – Athens, 2013

From the National Workshops, upgraded to National Conferences

Azerbaijan – International Conference

Ukraine – National Conference

Kazakhstan – National Conference

Armenia – National Conference

Knowledge Transfer process

Unscheduled Training – Vienna, 2011

Case Study Seminar – Athens, 2012