

WP 2. Policy gaps and analytical framework to identify cooperation opportunities with third countries

CIEMAT, JR, PIK

BETTER PROJECT MEETING

21 February 2013, Madrid



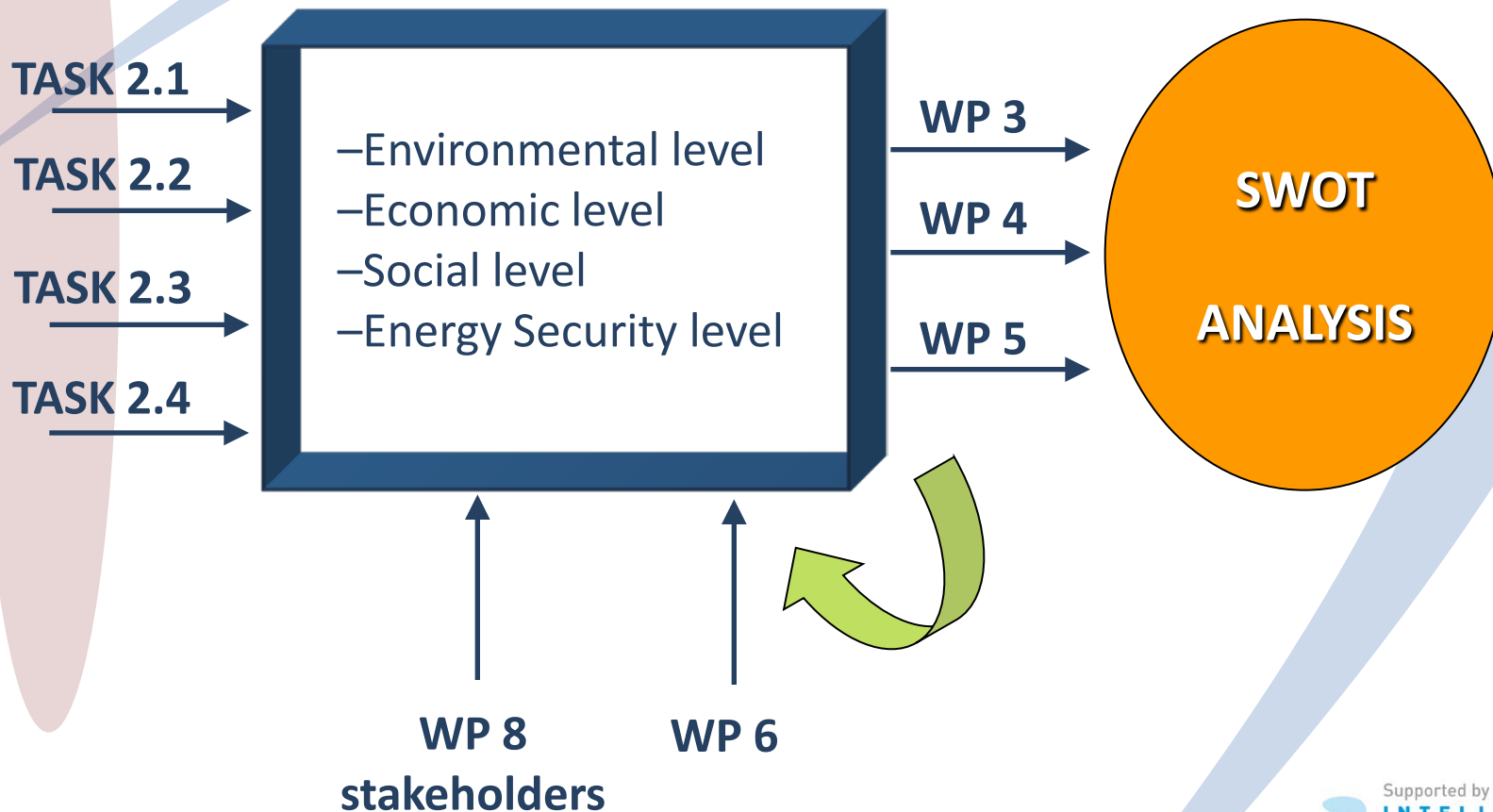
Policy gaps and analytical framework



- **Task 2.1: Analysis of MS progress towards RES targets, use of cooperation mechanism and exiting EU-third countries RES cooperation initiatives – ECN**
- **Task 2.2: Pre-assessment of the potentials and the benefits of intensified RES cooperation –TUWIEN**
- **Task 2.3: Design of the cooperation mechanisms & other finance mechanism for the deployment of the RES in third countries – JOANNEUM**
- **Task 2.4: Identification of crucial parameters to exploit the potential of the third countries cooperation mechanism –PIK**
- **Task 2.5: Identification of methodologies/indicators to measure/assess those parameters that can be applied systematically in the case studies**

INPUTS AND OUTPUTS

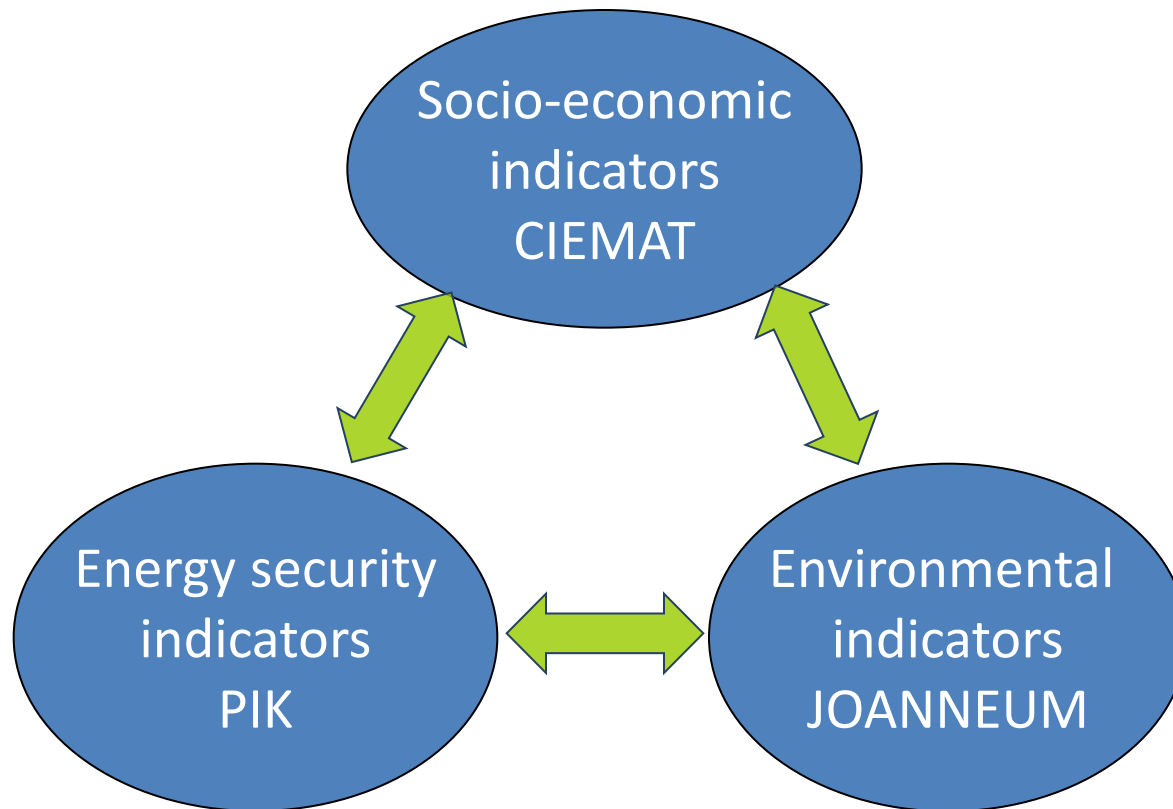
TASK 2.5: define indicators and methodologies to measure the changes in the identified parameters (2.4) due to the implementation of Art. 9



PARTNERS INVOLVEMENT



TUWIEN (WP6): MODEL



Task Leader: CIEMAT

PARTNERS INVOLVEMENT



CHALLENGES:

- To gather all data to measure the indicators for each case study
 - Lack of data in many areas: Input-Output Table Libya
 - Not updated data: Social Accounting Matrix Morocco, 1994

ACCURACY



PRAGMATISM

INDICATORS QUALITY



+

Accuracy

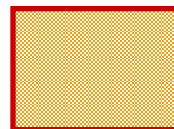
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+

Applicability

|

Minimum Quality Level
agreed with WP3, 4, 5



PRELIMINARY MACRO ECONOMIC INDICATORS FOR EXPORTER COUNTRIES



SCALE	TYPE	IMPACTS	INDICATORS
MACRO LEVEL	+	<ul style="list-style-type: none"> • Technology transfer 	<ul style="list-style-type: none"> - Number of new industries or factories - Creation of training workshops or specific education programs
		<ul style="list-style-type: none"> • Job creation • Increase of national revenue • Creation of local economic activity • New Foreign Direct Investment 	<ul style="list-style-type: none"> - Unemployment rate - GDP - Purchasing power of citizens - Multiplier effect
		<ul style="list-style-type: none"> • Increase of electricity demand (based on new power capacity) 	<ul style="list-style-type: none"> - Energy use per capita - Energy use per unit of GDP - Non-carbon energy share in domestic energy and electricity production
	-	<ul style="list-style-type: none"> • Loss of best generation sites (to importer country) • Difficulties with policy promotes fossil or nuclear power 	<ul style="list-style-type: none"> - % of the energy production generated in best sites that go to importer countries - Number of barriers

PRELIMINARY MICRO ECONOMIC INDICATORS

TYPE	IMPACTS	INDICATORS
+	• Increase of liberalization & market access	- Number of new investors interested in RE projects - Starting a business indicator (World Bank)
	• Increase of business opportunities	- Doing business ranking (10 indicators) (WB)
	• Creation of technical assistance programs	- Number of technical assistance programs and institutional settings
	• Increase value of properties	- Changes in prices of rural areas before and after the project
-	• Bureaucratic risks/inefficiencies and lack of market protection	- Number of broken agreements - Number of start-up business that were finally implemented - Registering property indicators (WB) - Dealing with constructions permits ranking
	• Lack of database (easy and transparent information)	- Databases available, difficulties to get public information
	• Exporter state stability (depends on political and governmental involvement)	- Enforcing contracts indicator (WB) - Protecting investors indicator: (i) Extent of disclosure index, (ii) Extent of director liability index, (iii) Ease of shareholder suits index, (iv) Strength of investor protection index, (v) Worldwide Governance Indicators, (vi) Political stability and Absence of Violence Indicator
	• Risk of perception and pilot projects by investors	- Difficulties to get information from the public organisms
	• Lack/inefficiency of electricity infrastructures (transmission lines interconnections, capacities, etc.)	- Number of current infrastructures available - Number of additional infrastructures to be built - Cost for the hosting country to estimate compensation measures
	• Financing risks	- Getting credit indicators: (i) strength of legal rights index, (ii) depth of credit information index, (iii) public credit registry coverage, (iv) private credit bureau coverage
	• Perception of unfair distribution of cost and benefits (neo-colonialism)	- Claims received during the public consultation - Survey results from the host citizens - Review of media articles related to the project
	• Decrease value of properties (due to expropriations)	- Changes in the prices of rural areas before and after the project - Number of expropriations

PRELIMINARY SOCIAL INDICATORS FOR EXPORTER COUNTRIES



	TYPE	IMPACTS	INDICATORS
SOCIAL INDICATORS FOR EXPORTER COUNTRIES	+	<ul style="list-style-type: none"> Increase of grid accessibility of rural and marginal areas 	- Number of new households connection to grid
		<ul style="list-style-type: none"> Increase of population in country 	- Census/statistics
		<ul style="list-style-type: none"> Decrease of sanitary risks associated to pollution of fossil fuels/accident 	- Number of respiratory diseases - Number of diseases by fuel chain
		<ul style="list-style-type: none"> Increase of people formation 	- Number of new courses
		<ul style="list-style-type: none"> Decrease of child work 	- Rate of school attendance
	-	<ul style="list-style-type: none"> Uncertainty of unfair distribution of cost and benefits (neo-colonialism) 	- Claims received during the public consultation - Survey results from the host citizens - Review of media articles related to the project
		<ul style="list-style-type: none"> Increase of household income spent on fuel and electricity (higher generating cost of RE electricity) 	- Share of household income spent on fuel and electricity
		<ul style="list-style-type: none"> Increase of social inequality (due for a higher generation cost) 	- Household energy use for each income group and corresponding fuel mix

PRELIMINARY ENVIRONMENTAL INDICATORS FOR EXPORTER COUNTRIES

	Wind	Biomass	Solar	Hydro	Possible indicators
-	<ul style="list-style-type: none"> • Visual intrusion 	<ul style="list-style-type: none"> • Visual intrusion 	<ul style="list-style-type: none"> • Visual intrusion 	Visual intrusion	-Number of damaged areas with aesthetic value
	<ul style="list-style-type: none"> • Loss of habitats • Loss of biodiversity • Changes on migratory routes birds 	Impacts on ecosystems & biodiversity: <ul style="list-style-type: none"> • Loss of habitats. • Changes on biodiversity 	<ul style="list-style-type: none"> • Loss of habitats • Loss of biodiversity. 	<ul style="list-style-type: none"> • Loss of habitats • Changes on terrestrial and aquatic habitats. • Loss of biodiversity 	-Number of damaged areas with high biodiversity/ecosystems -% of invasive crops used for bioenergy projects -% areas in which allochthonous spss replace autochthonous sps.
	Impacts on fauna <ul style="list-style-type: none"> • Loss of population density 		Impacts on fauna: <ul style="list-style-type: none"> • Loss of population density 	Impacts on fauna: <ul style="list-style-type: none"> • Loss of population density 	-Number of deaths of animals
	<ul style="list-style-type: none"> • Noise impacts 				-dB/kWh
	Atmospheric emissions from: <ul style="list-style-type: none"> • Transport of constructing and maintenance phase 	Atmospheric emissions from: <ul style="list-style-type: none"> • Agricultural activities (N2O) • Transport of constructing and O&M plant 	Atmospheric emissions from: <ul style="list-style-type: none"> • Transport of constructing and O&M maintenance plant 	Atmospheric emissions from: <ul style="list-style-type: none"> • Transport of constructing and maintenance phase • Reservoir maintenance (specially CO2 and CH4) 	-Emissions of pollutants per kWh classified by impact categories -Concentrations of air pollutants in local areas
	Impacts on water: <ul style="list-style-type: none"> • Depletion of the resource 	Impacts on water: <ul style="list-style-type: none"> • Depletion of the resource • Water pollution from agricultural effluents (NOx), from O&M of the plant 	Impacts on water: <ul style="list-style-type: none"> • Depletion of the resource 	Impacts on water: <ul style="list-style-type: none"> • Eutrofization of reservoir water • Alteration of hydrological regimes and river course • Increased sedimentation 	-m3 per kWh -Emissions to water of different pollutants per kWh -Amount of sedimentation prior and after the hydro plant.
		Impacts on ecosystems and biodiversity: <ul style="list-style-type: none"> • Enhanced biodiversity • Reduction of fire in forests 			-% of decreased desert area -number of new species -Occurrence of fires in managed forests compare with wild forests
+				Regulation of river regime	-Number of flooding avoided in order to strong precipitation

PRELIMINARY ENERGY SECURITY INDICATORS FOR EXPORTER COUNTRIES



TYPE	IMPACTS	INDICATORS
+	<ul style="list-style-type: none"> • Decreases related to depletion of reserves/resource • Decrease on energy imports • Increase of energy security (diversification) • Decrease of energy risks associated to pollution of fossil fuels/accident 	<ul style="list-style-type: none"> - Available remaining sources - Supply-demand index - Reserves to production rates (R/P) - Resource estimates: quantity of fossil resources - Energy price - Net energy import dependency - Ratio net import /consumption of oil, gas, coal and electricity - Diversity in energy fuel type and geographical source, and amongst suppliers - Market liquidity - Mean variance portfolio theory (MVP) - Annual diseases by fuel chain
-	<ul style="list-style-type: none"> • Geopolitical risk • Intermittency in energy supply (of some renewable resource without storage) 	<ul style="list-style-type: none"> - Political stability: <ul style="list-style-type: none"> - ICRG (International Country Risk Guide) political risk rating - WGI (Worldwide Governance Indicators) - HDI (Human Development Index)

WORKING PLAN



- 1. CIEMAT:**
→ draft of potential indicators and methodologies
- 2. CIEMAT, JOANNEUM, PIK, stakeholders & others :**
→ fine-tune proposal to WP leaders
- 3. WP Leaders, stakeholders & others:**
→ define a consensuated list of feasible indicators & methodologies, and a minimum required level
- 4. FINAL OUTPUT:**
→ various indicators for each category

*Begin.
March*

*Begin.
April*

*End
April*

**BRINGING EUROPE AND THIRD COUNTRIES CLOSER
TOGETHER THROUGH RENEWABLE ENERGIES**



**Thank you
for your attention!**

Enjoy Madrid!

