Centralization and Accountability: Theory and Evidence from the Clean Air Act

Federico Boffa: Università di Macerata
Co-Authors: Amedeo Piolatto, Giacomo Ponzetto

Abstract. This paper studies fiscal federalism when voter information varies across regions. We develop a model of political agency with heterogeneously informed voters. Rent-seeking politicians provide public goods to win the votes of the informed. As a result, rent extraction is lower in regions with higher information. In equilibrium, electoral discipline has decreasing returns. Thus, political centralization efficiently reduces aggregate rent extraction. The model predicts that a region’s benefits from centralization are decreasing in its residents’ information. We test this prediction using panel data on pollutant emissions across U.S. states. The 1970 Clean Air Act centralized environmental policy at the federal level. In line with our theory, we find that centralization induced a differential decrease in pollution for uninformed relative to informed states.

Policy Options to Improve the European Emissions Trading System: A Multi-Criteria Analysis

Stefano Clò: Università di Milano
Co-Authors: Susan Battles, Pietro Zoppoli

Abstract. This paper considers several policy options which have been proposed to improve the functioning of the ETS. These options require an intervention either on the ETS cap (-30% target, set-aside, carbon central bank, long-term target) or on the carbon price (European and national price floor). We analyse the impact of each policy on the ETS carbon price and emissions. A multi-criteria evaluation method is applied to compare the policy options against a plurality of environmental, economic and procedural criteria. We find that the final ranking depends on the goals to be achieved, i.e. the relative weights attributed to the criteria. When policymakers want mainly to support the carbon price both in the short and long-run, while improving ETS flexibility and harmonization, the CCB and the EU price floor are respectively ranked as first and second-best options. As the preference for environmental and implementation goals gradually increases, the position of the EU price floor and CCB options tend to invert. The -30% target should be adopted when reducing emissions is the priority goal, while a national price floor is the worst option, in this case. Nevertheless, self-interested States looking for a relatively quick, feasible solution, may find it optimal.

Productivity Growth, Environmental Regulation and Winwin Opportunities: The Case of Chemical Industry in Italy and Germany

Alessandro Manello: Istituto di Ricerca sull’Impresa e lo Sviluppo CERIS/CNR

Abstract. This paper analyses the technical and environmental efficiency of a sample of firms located in Italy and Germany, which are included in the European Pollution Emission and Transfer Register (E-PRTR). The Directional Distance Function (DDF) approach is here applied to obtain global efficiency score and TFP growth indexes, both able to consider pollution in computations. Standard Malmquist-Luenberger indicators are replaced by their sequential version to obtain more reliable results. Emissions generally increase between 2004 and 2007, with a worse performance of Italian firms. Eco-efficiency indicators partially slim down that evidence considering both turnover and input usage, underlining a reduction of average inefficiencies over time. From a dynamic viewpoint empirical findings shows a most favourable trends in environmental TFP growth for German firms. Finally a formal test for the Porter’s hypothesis is provided, but its inconsistency emerges from the analysed sample when pollution is considered.
ENVIRONMENTAL REGULATION AND COMPETITIVENESS: EVIDENCE FROM EUROPE
Yana Rubashkina: Università Cattolica del Sacro Cuore
Co-Author(s): Marzio Galeotti, Elena Verdolini

Abstract. The current paper aims to develop an empirical test of the environmental regulation impact on the industrial performance in the EU Member States. Traditionally, the neoclassical economic view has been that (strict) regulation adversely affects productivity and competitiveness, as it leads to higher expenses by businesses and imposes constraints on industry behaviour. As regards to the environmental regulation, it was believed that by imposing R&D in cleaner technology it reduces R&D expenditure in other, more profitable areas, such as a firm’s core business, given that investment budgets are limited (e.g., Gray and Shadbegian, 1995). The traditional theory that the compliance with environmental regulation would be likely to reduce the competitiveness of the engaged sectors/firms was first challenged by Porter (1991) and further developed by Porter and Van der Linde (1995). This paper has provided econometric evidence on the relations between environmental regulation and competitiveness, as captured by innovation activity and productivity, in a panel of industrial sectors across twenty one EU member countries plus Norway over the period of 1997-2009. We find a positive and statistically significant effect of environmental regulation on innovation activity. Other things equal, the more stringent is energy tax in an industrial sector, the higher is its R&D expenditures in the short-run. Whereas the higher is the aggregate environmental regulation, captured by PACE (Pollution abatement and control expenditures), the stronger is the propensity to patent in one and two years period. Although the magnitude of the effect is very small, other things equal, 1% environmental expenditures increase results in about 0.5-0.8% increase of innovation activity (that is true both for R&D expenditures and number of patent applications).

ENVIRONMENTAL VALUATION AND ACCOUNTING – ROOM EC2
Chairperson: Anna Montini, Università di Bologna

THE COSTS OF CORRUPTION IN THE ITALIAN SOLID WASTE INDUSTRY
Graziano Abrate: Università del Piemonte Orientale
Co-Author(s): Fabrizio Erbetta, Giovanni Fraquelli, Davide Vannoni

Abstract. The paper investigates the link between corruption and efficiency by using a rich micro-level dataset concerning solid waste collection activities in 529 Italian municipalities observed over the years 2004-2006. In order to test the impact of corruption on cost efficiency we estimate a stochastic latent class frontier approach, which accounts for technological heterogeneity across units. The results of our estimates show that corruption significantly increases inefficiency, a finding which is robust to the inclusion of alternative local corruption indicators and of other control variables such as geographical, demographic and political factors. Finally, we find that the impact of corruption tends to be greater in the southern regions of the country and for those municipalities which are less involved in recycling activities.

MONITORING CROSS COUNTRY CORRUPTION THROUGH PERCEPTION INDEXES: DEVELOPMENT, INSTITUTIONAL AND ENVIRONMENTAL ISSUES.
Annalisa Castelli: Università di Cassino e del Lazio Meridionale
Co-Author(s): Simone Borra

Abstract. Subjective indexes of perceived corruption such as the Corruption Perception Index, allow to compare countries according to their perceived level of public sector corruption. A country’s rank indicates its position relative to other countries included in the index. Nevertheless this ranking does not allow to take into account different peculiarities of examined countries. It seems in fact obvious, as greatly highlighted in the literature, to find economically developed, long-established liberal democracies, with a free and widely read press, a high share of women in government and a history of openness to trade, in the upper portion of the ranking, meaning that they are perceived as being more transparent. This work starts to fill this gap estimating a new index, that we call Excess Perceived Corruption Index (EPCI), which could be a useful tool for cross-country analysis. To this end in fact, the EPCI can be applied along two main dimensions: the comparison of similar countries with respect to their level of development, and the possibility of isolating differential effects inside a homogeneous geographical area.
SUSTAINABILITY PERSPECTIVES: A NEW METHODOLOGICAL APPROACH FOR QUANTITATIVE ASSESSMENT
Fabio Eboli: Fondazione Eni Enrico Mattei (FEEM)
Co-Author(s): Lorenza Campagnolo, Carlo Carraro, Elisa Lanzi, Ramiro Parrado, Elisa Portale.

Abstract. This paper proposes a new tool to assess sustainability and make the concept of sustainable development operational. It considers its multi-dimensional structure combining the information deriving from a selection of relevant sustainability indicators belonging to economic, social and environmental pillars. The main novelties of this approach are the modelling framework, a recursive-dynamic computable general equilibrium used to calculate the trend of all indicators over time throughout the world, and the aggregation methodology to reconcile them in one aggregate index to measure overall sustainability. The former allows capturing the sector and regional interactions and higher-order effects driven by background assumptions on relevant variables to depict future scenarios. The latter makes it possible to compare sustainability performances, under alternative scenarios, across countries and over time. Main results show that the current sustainability at world level differs from what the traditional measure of well-being, the GDP, depicts, highlighting the trade-offs among different components of sustainability. Moreover, in the next decade a slight decrease in world sustainability may occur, in spite of an expected increase in world domestic product. Finally, dedicated policies increase overall sustainability, showing that social and environmental benefits may be greater than the correlated economic costs.

AIR POLLUTION – ROOM EC7
Chairperson: Valentina Bosetti, Fondazione Eni Enrico Mattei (FEEM), Università Luigi Bocconi

TO DRIVE OR NOT TO DRIVE? A SIMPLE EVOLUTIONARY MODEL
Simone Borghesi: Università di Siena
Co-Author(s): Angelo Antoci, Gerardo Marletto

Abstract. Car use is an increasingly serious problem in many modern cities because of polluting emissions, noise, accidents and congestion. To examine this issue, this paper analyzes the individual choice between taking the car and using alternative transport modes (e.g. walking, cycling, taking the bus etc...) in the presence of cars' negative impacts on alternative transport modes. Using a simple evolutionary model, we show the existence of suboptimal Nash equilibria characterized by the widespread use of cars and discuss the effects of simple transport policies that reduce cars' negative impacts on alternative transport modes.

NON-CO2 GREENHOUSE GAS MITIGATION MODELING WITH MARGINAL ABATEMENT COST CURVES: TECHNICAL CHANGE, EMISSION SCENARIOS AND POLICY COSTS
Samuel Carrara: Fondazione Eni Enrico Mattei (FEEM)
Co-Author(s): Giacomo Marangoni, Massimo Tavoni

Abstract. The abatement of non-CO2 greenhouse gases (OGHG) has proved to be of paramount importance for reaching global mitigation targets. The modeling of their abatement is normally carried out referring to marginal abatement cost (MAC) curves, which by now represent a standard approach for such an analysis. As no evolution scenarios are available to describe future mitigation opportunities for OGHGs, exogenous technical progress factors (TP) are normally imposed, producing progressive MAC dilatation over time. The main aim of this work is to perform a sensitivity analysis evaluating climate and economic effects of imposing various TPs under different policy scenarios: the analysis shows that TP variation has a considerable impact on the climatic and economic results.

ENVIRONMENTAL TECHNOLOGIES AND AIR EMISSIONS: A REGIONAL ANALYSIS OF CROSS-SECTORAL DIFFERENCES
Claudia Ghisetti: Università di Bologna
Co-Author(s): Francesco Quatraro

Abstract. The research on the role of external knowledge in triggering Environmental -Innovations (EIs) is,
to our knowledge, still scanty. On the one hand, the recent attention on the so-called “open innovation mode” (OIM) (e.g. Chesbrough 2003, 2006) has brought to the front new insights on the management prerequisites for setting at work the well-known mechanisms of learning-by-interacting and innovation cooperation, which are rooted in the innovation system perspectives (Lundvall, 1992). On the other hand, these results have been only limitedly transferred and applied to the analysis of Els. In the present work, we aim to fill this gap by investigating whether the adoption of OIMs is able to spur Els at the firm level. Drawing on Laursen and Salter (2006), we consider two forms of OIMs: broad and deep external knowledge sourcing strategy. Furthermore, we investigate the process through which, once acquired, external knowledge is concretely transformed into actual EI performance. To this aim, drawing on the absorptive capacity literature we scrutinize the moderating effect of: R&D (Cohen and Levinthal, 1989), human capital (e.g. Vinding, 2006), social integration mechanism (e.g. Zhara & George, 2002) and cooperation (Cockburn and Henderson, 1998; Fosfuri and Tribó, 2008). The results of our econometric analysis, based on CIS 2006-2008 data for manufacturing firms in 11 countries, confirm the theoretical expectations that we develop, with some interesting specifications. The adoption of Els is significantly affected by the access to knowledge generated outside the boundaries of the firm, pointing to the fact that a shift to an “open innovation” mode can be paralleled by a shift towards a more sustainable one: “be open, and you can be sustainable”. However, we notice an inverted-U shaped effect of broad sourcing, which points to the presence of decreasing returns after a certain threshold. Furthermore, whereas deep sourcing allow firms to acquire already usable and exploitable knowledge, internal capabilities are crucial in transforming external knowledge into actual EI when the firm adopts a broad external sourcing strategy.

WHO IS MOST VULNERABLE TO AIR POLLUTION? AVERTING BEHAVIOUR, HEALTH AND INTRA-HOUSEHOLD DYNAMICS IN URBAN BEIJING
Chiara Ravetti: CIES Centre for International Environmental Studies, Geneva
Co-Author(s): Popp Jin, Yana Mu, Quan

Abstract. The objective of this study is to analyse from a theoretical and empirical perspective the response of households to the potential health damages of air pollution. We focus on the choice between costly behaviours, such as insurance or purchase of durable goods for self-protection (e.g. air purifiers), and cheaper behaviours that are more time-consuming, such as reducing time outdoor or changing means of transportation. This choice between incurring a monetary or time cost for protecting from the damages of pollution is modelled as an intra-household allocation decision for a public good, clean air. Each family member faces a classical trade-off between income and non-market activities (leisure, averting behaviour, taking care of children or elderly people, etc.), and in addition agents face an externality if they work more, because they are less flexible to avert and therefore experience individually worse health. Within the household, agents bargaining for who should dedicatets more time to income or non-market tasks, depending on relative opportunity costs. We test the predictions of this model with data we collected over the summer 2012 in a household survey in urban Beijing, which elicits the expenditure and time allocation to averting activities. Particular attention is dedicated to income effects, in order to identify which groups are more vulnerable to air pollution in terms of ability to avert.

CLIMATE CHANGE - 1 – ROOM Aula Magna
Chairperson: Roberto Zoboli, Università Cattolica del Sacro Cuore, Milano

EVALUATING PRICE SIGNALS IN CLIMATE CHANGE POLICY: INTERFUEL SUBSTITUTION AT FIRM LEVEL
Rossella Bardazzi: Università di Firenze
Co-Author(s): Filippo Oropallo, Maria Grazia Pazienza

Abstract. We aim at investigating interfuel substitution in the Italian industrial sector using a panel of microdata for firms. According to our estimates there are significant differences in interfuel elasticities between small and large firms and among industrial sectors. Energy demand of main energy products is not very responsive to relative price changes in the case of small firms, whereas higher (negative) own elasticities have been estimated for larger firms, suggesting that price signals are most effective in the latter case. Cross-price elasticities are mainly positive, confirming that there is room for a change in energy product mix. We found also heterogeneity among business sectors depending on the firms’ dimensional
distribution within each sector and the production characteristics. These results are important in designing an energy tax system as the efficacy and the distributive effects of the policy can be appreciated only considering the underlying heterogeneity at firms’ level.

**IMPATTI DEL CAMBIAMENTO CLIMATICO SUL SETTORE TURISTICO IN ITALIA**

*Andrea Bigano: Fondazione Eni Enrico Mattei (FEEM)*

*Co-Author(s): Francesco Bosello*

**Abstract.** Quest'articolo rappresenta il primo tentativo di quantificare l'impatto del cambiamento climatico sui flussi turistici nelle province Italiane, tramite una procedura di downscaling delle proiezioni dell'L'Hamburg Tourism Model (HTM). Questo modello simula i flussi turistici globali tra 207 paesi di origine e destinazione tenendo in considerazione gli effetti di sostituzione tra le varie destinazioni e le diverse caratteristiche del turismo internazionale quello domestico, e ne deriva le implicazioni in termini di spesa turistica e della durata del soggiorno (Bigano et al., 2007a). Le proiezioni sui flussi turistici lungo l’arco del ventunesimo secolo sono state realizzate sulla base di simulazioni relative all’andamento della popolazione e del reddito, in assenza e in presenza di cambiamenti climatici. Tali simulazioni si traducono in variazioni dell’offerta turistica. Sul fronte della domanda tali scenari influenzano, invece, il numero totale di turisti per paese d'origine.

**CLIMATE CHANGE, SMOOTHING WITH WATER STOCK AND IMPACT ON THE AGRICULTURAL SECTOR IN THE PO VALLEY (ITALY)**

*Martina Bozzola: CIES Centre for International Environmental Studies, Geneva*

**Abstract.** This paper uses a simple dynamic optimization model to illustrate the potential for suboptimal management of the quantity and spatial allocation of water resources use. We analyze the manner in which decentralized decision making and heterogeneous costs in accessing the water resource, imply a water storage problem. This is increasingly relevant with higher climate variability. Spatial externalities arise in the form of suboptimal allocation to early users, as some agents have an incentive to overexploit the water resource with serious consequences for those agents facing higher water extraction costs since the beginning. Heterogeneity in access makes a case for government intervention, especially as water stocks are attributed a buffer value against climate fluctuations. We rely on a mean-variance framework to give insights on how centralized water management can play a role in managing the water stock in presence of increasing variability in surface water supply. In the empirical section of this paper, we find that climatic variables have had a non-negligible impact on the agricultural yields. We show that a more efficient water management system, integrated along the watershed, is needed to cope with an increasingly unpredictable weather.

**THE COST OF ADAPTING TO CLIMATE CHANGE IN ETHIOPIA: SECTORWISE AND MACRO-ECONOMIC ESTIMATES**

*Raffaello Cervigni: The World Bank*

*Co-Author(s): Sherman Robinson, Kenneth Strzepek*

**Abstract.** This paper uses spatial-explicit analyses of climate change effects on selected key sectors of Ethiopia’s economy to estimate both sector-wise and economy-wide estimates of impacts and adaptation costs. Using four IPCC-vetted Global Circulation Models (GCMs) to bracket the uncertainty surrounding future climate outcomes, the paper finds that by 2050 climate change could cause GDP to be 8–10 percent smaller than under a no-climate change baseline; it could induce a two-fold increase in variability of growth in agriculture; and it would affect more severely the poor and certain parts of the country. The paper also finds that adaptation to climate change might cost an annual average of $0.8-2.8 billion; and $ 1.2 to 5.8 billion if one takes into account residual damages which may not be addressed by adapting existing development plans. The paper also provides sector-sector specific insights on impacts and adaptation options in agriculture, road transport and hydro-power. In particular, rapid development of Ethiopia’s hydro-potential, upgrading of the road design standards, and gradual diversification of the economy away from the more climate vulnerable sectors are likely to be important elements of any climate-resilient development strategy.
FROM MULTI-SECTOR DATA TO MULTI-SECTOR MODELS: PRODUCTION ELASTICITIES AND FACTOR AUGMENTING TECHNOLOGICAL CHANGE
Claudio Baccianti: Centre for European Economic Research (ZEW)

Abstract. In multi-sector models of climate policy, structural change has become an important contribution to achieve emission targets together with technological progress. This paper aims to cover part of the gap in the empirical literature. I present the estimation of sectoral production functions with biased technological change using an international multi-sector dataset. As a novel extension to Leon-Ledesma et al. (2010), factor-augmenting coefficients and the elasticity of substitution between capital, labour and energy are identified by normalising the production function to clusters of observations. First, slicing up the dataset along the sector type dimension brings less information loss. Second, it fixes identification issues of technology parameters well known in the literature. The normalised model does not need first differencing to be estimated, giving clearer results and leaving room for the analysis of long-run relationship between factor shares and prices.

THE IMPACT OF NATURAL DISASTERS ON REMITTANCE INFLOWS TO DEVELOPING COUNTRIES
Giulia Bettin: Università Politecnica delle Marche

Abstract. The number and the frequency of natural disasters have undoubtedly increased in the last decades. In particular, weather-related natural disasters - hydrological, meteorological and climatological - have become extremely frequent, both in rich and in poor countries, due to changing climatic conditions and widespread environmental degradation (IPCC, 2007). Developing countries, however, might benefit from larger remittance inflows from their diasporas abroad in the aftermath of a disaster: altruistic migrants could increase their transfers to relatives back home to support them within the reconstruction process; in addition, migrants from areas which are often severely affected by natural catastrophes might take into account the higher risks those at home have to face and send more compared to migrants from "safer" regions. The link between natural disasters and remittances is still relatively unexplored in the literature at the aggregate level. With the present paper we offer further empirical evidence on the impact that weather-related natural disasters may have on remittance flows towards a set of 120 developing countries for the period 1990-2010.

EVIDENCE ON CO2 EMISSIONS AND BUSINESS CYCLES
Baran Doda: London School of Economics

Abstract. CO2 emissions and GDP are positively correlated over the business cycle. Most climate change researchers would agree with the preceding intuitive statement despite the absence of a study that formally analyzes the relationship between emissions and GDP at business cycle frequencies. The current paper attempts to address this gap in the literature by providing a simple, rigorous and consistent empirical analysis of the relationship in a comprehensive cross country panel. To this end, I decompose the aggregate emissions and GDP series into their growth and cyclical components using the HP filter and focus on the cyclical components. Four robust facts emerge from this analysis: i) Emissions are procyclical and cyclically more volatile than GDP in a typical country; ii) Cyclical volatility of emissions is negatively correlated with GDP per capita across countries; iii) Procyclicality of emissions is positively correlated with GDP per capita across countries; and iv) The composition of GDP is crucial for the business cycle properties of emissions but the relationship is complex. I report an extensive set of robustness checks which corroborate these findings. Finally, I discuss the implications of my findings for future research and policy.
HYDROCARBON EXPLOITATION AND MACROECONOMIC PERFORMANCE: A STRUCTURAL VAR APPROACH FOR BASILICATA
Floriana Florestano: Fondazione Eni Enrico Mattei (FEEM)

Abstract. we investigated the relationship between hydrocarbon extraction and GDP, employment and value added in construction in Basilicata. Further, structural analysis of the VECM specification (orthogonalize impulse response function and variance decomposition) were employed to check the robustness of the causality tests. Overall, we obtain consistent empirical results independently of the methodologies adopted. In particular, the direction of causality from GDP to extractions is confirmed by the shape of the IRF and by the high proportion of Hydro variation percentage explained by changes in GDP. No causality from value added in construction to exploitation of natural resources was found. The IRF results show that the effect on the construction sector of the unanticipated shock in Hydro is reabsorbed after two periods. Moreover, FEVD showed that less than 5% of the unforeseen variation in extraction is due to hydrocarbons shocks. Finally, absence of causality among employment and hydrocarbon is not surprising since oil sector is one of the activity with the highest capital intensity. It has, for example, a capital intensity that is 33 times that of the manufacturing sector.

ECOSYSTEMSERVICES AND BIODIVERSITY – ROOM EC2
Chairperson: Francesco Nicolli, Università di Ferrara; CERIS/CNR

ECONOMIC DRIVERS OF BIOLOGICAL INVASIONS: A WORLDWIDE, BIOGEOGRAPHICAL ANALYSIS
Sergio Giaccaria: Università di Torino
Co-Author(s): Silvana Dalmazzone

Abstract. The introduction of harmful non-indigenous species is generally acknowledged to depend both on the propagule pressure imposed by openness to international trade and on the health of the receiving ecosystem. Bio-geographical factors however play a crucial role in determining the level of risk associated with trade. We develop an analytical treatment of bio-geographical similarity between trade partners, within a model that links the incidence of invasive species to resource extraction, pollution and to import volumes disaggregated by country and region of origin. The model, estimated with data on invasive species of all taxa in 123 countries, shows that considering the geographical structure of trade flows and the bio-geographical similarity between sources and destinations substantially improves our understanding of the drivers of biological invasions. The results allow us to identify, in a worldwide perspective, the relative risk of biological invasions (by habitat and organism type) entailed by different commercial partners.

ORDER EFFECTS IN PAYMENT LADDER CONTINGENT VALUATION QUESTIONS: THE EFFECT OF REVISING WILLINGNESS TO PAY ANSWERS
Alberto Longo: Queen’s University Belfast
Co-Author(s): Anil Markandya, Ramon Ortiz

Abstract. Asking a sequence of contingent valuation questions in the same questionnaire may lead to sequencing or ordering, among others. Order effects arise when the valuation of a good presented as a substitute to goods already valued (exclusive lists) depends on the position of that good in the sequence of CV questions (Carson and Hanemann, 2005). We argue whether ordering can be mitigated by offering respondents the opportunity to revise their WTP answers, after they have valued all goods. We use a payment ladders contingent valuation questions to value two goods, one nesting the other. The nested good is a program that protects the Dead Sea from further decline. The nesting good is a program that both stimulates peaceful cooperation in the Middle East and protects the Dead Sea from further decline. We find that ordering is mitigated in the valuation of the nesting good for those respondents that did revise their WTP answers.
NGOS AND PARTICIPATORY CONSERVATION IN DEVELOPING COUNTRIES: WHY ARE THERE INEFFICIENCIES?
Elena Vallino: Università degli Studi di Torino; Collegio Carlo Alberto
Co-Author(s): Gani Aldashev

Abstract. The concept of combination of economic development and nature conservation emerged in NGOs programmes for developing countries, under the label of participatory conservation. This implies the direct involvement of the local communities in conservation. We develop an economic model to explain why participatory conservation has been “invented”, why in many situations it does not function, and why environmental NGOs find it difficult to make it functioning. The occurrence of the tragedy of the commons in a given natural area may justify an NGO intervention. Since there is empirical evidence of failure of a top-down approach in conservation, the effort of the local stakeholders is necessary. Given that there is contract incompleteness, the NGO may apply participatory conservation. However, since local farmers live at subsistence level and are strongly risk averse, they may give priority to agricultural income with respect to tourism income, which derives from conservation. They may not collaborate with the NGO for conservation activities if the NGO does not allocate some effort to sustain agriculture. However the NGO is funded by donors with environmental motivations. Therefore, it cannot justify an allocation of effort into agriculture rather than into conservation. It faces a trade-off between producing a large conserved area with non-cooperating local communities but with satisfied donors and a smaller conserved area with cooperating local communities but unsatisfied donors.

ENERGY – ROOM Aula Magna
Chairperson: Valeria Costantini, Università Roma Tre

WILLINGNESS TO SAVE AND INCOME DISTRIBUTION: AN EMPIRICAL ANALYSIS OF ENERGY SAVING AND ITS DETERMINANTS
Gionata Castaldi: Università di Roma “Tor Vergata”
Co-Author(s): Mariangela Zoli

Abstract. Domestic energy saving plays a central role in modern society and in energy policy. Despite this, the empirical literature on this topic is scarce and usually focused on the industrial sector. In this paper, we identify, through the implementation of a demand analysis based on the British Household Panel Survey (BHPS), the principal determinants that affect the amount of energy saved by each household. Furthermore, through the implementation of a theoretically based household production function, we estimate the households’ willingness to save and its income elasticity. The results help us to define the distributional issues of energy saving and its potentially relevant policy implications.

RESIDENTIAL ELECTRICITY PRODUCTION AND CONSUMPTION: THE CASE OF PHOTOVOLTAIC SYSTEMS
Vito Frontuto: Università di Torino

Abstract. The diffusion of microgeneration of electricity has been identified as one of the possible ways to reduce, at least in long term, the consumption of fossil fuels. To improve the diffusion of microgeneration among households different policies have been implemented to increase investments in small systems to produce renewable energy. In Italy the production of electricity with photovoltaic panels has been sustained with considerable resources. Production incentives for photovoltaic use two mechanisms: the so called “Conto Energia” and “Ritiro dedicato”. The Conto Energia is nothing but a cash transfer for each kW produced and can be seen as a sort of variable coupon on the investment in green energy. Although the policies outcomes are uncertain there is evidence of the effects on the photovoltaic diffusion among Italian households. The Authority of the Electric Service estimates that on-site installations using the Conto Energia increased from 6000 to 350.000 in five years. The model is estimated on an original dataset built on a web-survey (www.miceproject.it). The survey collects information on electricity production and consumption, houses and households characteristics and on the endowment of appliances using electricity. In order to take into account the dynamic behaviours of households, in particular consumption of electricity after installation of photovoltaic panels, we ask households to provide information about the consumption of electricity referred
to two years before and after the investment in solar energy. The longitudinal structure of the dataset will allow for the analysis of consumption dynamics of families producing electricity. Furthermore we will control for the presence of rebound effects reducing the gain in terms of efficiency generated by the technological change. Data collection is still in progress but the first information collected provide empirical evidences of behavioral changes of families producing in-home electricity both in consumption and in the appliances endowment.

CONSERVAZIONE ENERGETICA NEL CONSUMO DOMESTICO DI ENERGIA ELETTRICA
Giovanna Garrone: Università del Piemonte Orientale; Università di Torino
Co-Author(s): Sergio Giaccaria

Abstract. Negli ultimi decenni, in Italia come nei paesi Ocse, sono cresciute da un lato la quota relativa all'elettricità sul totale dei consumi energetici finali, dall'altro la quota di consumi energetici finali del settore domestico (famiglie). All'interno di quest'ultima, è cresciuta significativamente la quota di consumi attribuibili all'insieme delle appliances. Ciò è avvenuto in concomitanza di una significativa riduzione dei consumi unitari per i grandi elettrodomestici tradizionali, indotta anche da politiche per l'efficienza. Per studiare i margini di risparmio di elettricità ottenibili in ambito domestico tramite sole modifiche d'uso, a tecnologia costante, costruiamo un modello di simulazione ad agenti – strumento che consente di tenere conto dell'eterogeneità di soggetti e della loro interazione. I dati che forniscono una base realistica al modello provengono dall'Indagine Istat sui Consumi delle Famiglie, edizione 2009. Gli agenti sono le 2222 famiglie rilevate nella macroregione Piemonte e Valle d'Aosta, caratterizzate dai livelli iniziali di spesa per elettricità e spesa totale per consumi, la dotazione di elettrodomestici, la dimensione famigliare ed abitativa.

L'UTILIZZO DELLE RISORSE IDRICHE A SCOPI ENERGETICI: LA VALUTAZIONE DELLA QUALITÀ DEL SERVIZIO DI EROGAZIONE DI ENERGIA ELETTRICA
Stefania Troiano: Università di Udine
Co-Author(s): Antonio Massarutto, Francesco Marangon

Abstract. Obiettivo del presente lavoro è quello di individuare la disponibilità a pagare degli utenti per il miglioramento del servizio di fornitura elettrica approfondendo tra l'altro il caso dell'utilizzo delle risorse idriche. A tal fine si è proceduto ad una analisi dei costi e dei benefici derivanti dal miglioramento della gestione della qualità tecnica del servizio di fornitura elettrica per il caso di studio della Regione Autonoma Friuli Venezia Giulia, per la quale non erano state svolte in precedenza simili indagini. L'indagine ha interessato sia gli utenti privati (845 interviste valide) sia le imprese (280) ed è stata svolta durante i mesi di agosto e settembre 2012. Il questionario utilizzato per il presente studio è il risultato di un processo di validazione e di revisione che si è articolato in più pre-test nell'area di indagine. Nel questionario viene presentato anche uno scenario atto a determinare la disponibilità a pagare (DAP) degli utenti per evitare il verificarsi di eventi che possano pregiudicare la qualità del servizio di fornitura dell'energia elettrica e per ottenere energia elettrica mediante l’utilizzo di fonti energetiche rinnovabili. Numerose informazioni sono state ricavate dall’analisi delle risposte, in particolare da quelle fornite dagli utenti che hanno sperimentato l’esperienza dell’interruzione della fornitura. In dettaglio, sono stati ricavati i dati relativi ai danni subiti dagli utenti e la loro disponibilità a pagare per migliorare il livello qualitativo della fornitura di energia elettrica. Interessanti risultati sono derivati dalle risposte volte a manifestare la disponibilità a pagare degli utenti per ottenere energia elettrica con fonti energetiche rinnovabili, soprattutto se confrontati con la disponibilità a pagare nei confronti di miglioramenti di altri aspetti della fornitura di energia elettrica. Le dichiarazioni di volontà a pagare per ricevere energia da fonti energetiche rinnovabili, soprattutto se confrontate con la disponibilità a pagare sono provenute dall’esperienza di interruzioni della popolazione per questa tematica. In dettaglio, il 31,6% degli intervistati privati ha evidenziato la propria disponibilità a pagare un minimo di € 1 in più per bolletta per tale finalità, mentre il 2,3% delle imprese intervistate è disposta a pagare almeno € 30 in più a bolletta. La raccolta dei dati per gli utenti privati sia per le imprese commerciali ha consentito, inoltre, di evidenziare il diverso comportamento di queste ultime, legato soprattutto alle elevate ripercussioni commerciali che un basso livello qualitativo della fornitura di energia elettrica può comportare per lo svolgimento di un’attività economica.
LE ANALISI ECONOMICO-AMBIENTALI NELLA DEFINIZIONE E NELL’IMPLEMENTAZIONE DELLE POLITICHE DI SETTORE: IL CASO DEI DANNI ALL’AMBIENTE

Tiziana Cianflone: ISPRA: Istituto Superiore per la Protezione e la Ricerca Ambientale


STATISTICHE AMBIENTALI: PROGETTI STRATEGICI IN PROGRESS

( comunicazione)
Angela Ferruzza: ISTAT
Co-Author(s): P.Ungaro, S. Tersigni, A. Ferrara

Abstract. Nell’ambito del sistema delle statistiche ambientali, L’Istat sta sviluppando attualmente numerosi progetti. Tra questi, quelli dedicati a Risorse idriche, Famiglie ed ambiente e Consumi energetici delle famiglie, Ambiente urbano sono particolarmente strategici. L’indagine Dati ambientali delle città, indirizzata ai 116 comuni capoluogo di provincia dove si concentra il 30 per cento della popolazione nazionale, è articolata in otto tematiche ambientali. Rende disponibile informazione statistica sia sulle qualità dell’aria e inquinamento acustico, in termini di produzione e diffusione degli inquinanti, reti locali destinate al loro monitoraggio e misure adottate per ridurre l’impatto, sia per le principali utilities ambientali, sull’utenza (in termini di consumi e fruizione) e sulle caratteristiche e qualità delle dotazioni infrastrutturali, attraverso le quali le amministrazioni garantiscono i servizi di fornitura di acqua potabile e depurazione, energia, trasporto pubblico locale e gestione dei rifiuti urbani. Consente quindi una lettura approfondita delle principali determinanti della qualità complessiva dell’ambiente urbano. Alla tematica energetica, sempre più rilevante nello sviluppo sostenibile delle società contemporanee, viene dedicato anche uno specifico approfondimento sul lato della domanda dalla nuova Indagine sui consumi energetici delle famiglie, varata nel 2012 dall’Istat in collaborazione con Enea e Ministero dello sviluppo economico. Con l’obiettivo di colmare una lacuna informativa aventita anche a livello internazionale, l’indagine sui consumi energetici delle famiglie intende offrire un quadro informativo del settore residenziale unico e completo degli elementi necessari alla quantificazione dei consumi con riferimento alle diverse destinazioni d’uso e alle diverse fonti energetiche, con particolare attenzione alle fonti rinnovabili (dati anche gli obiettivi 20-20-20) e alle biomasse. Nell’ambito della filiera delle acque per uso civile, l’edizione 2013 del Censimento delle acque, attualmente in corso di avvio, si rivolge ai gestori dei servizi idrici raccogliendo informazioni sul prelievo di acqua ad uso potabile, sul trasporto e la distribuzione nelle reti comunali, sulle reti fognarie e sugli impianti di depurazione delle acque.
rifletta rubane. Il quadro delle acque viene completato da analisi sull'uso delle risorse idriche che rispondono a numerosi obiettivi di stima: bilancio idrologico, qualità dei corpi idrici, carichi inquinanti rilasciati nei corpi idrici; prelievo e consumo di acqua per i diversi settori economici.

RIFLESSIONI E PROSPETTIVE SULLA CONTABILITÀ AMBIENTALE
(comunicazione)
Cesare Costantino: ISTAT

Abstract. La contabilità ambientale, quale disciplina della statistica ufficiale, sta attraversando una stagione di sviluppo senza precedenti. Il suo ruolo di strumento al servizio della conoscenza, sia nella ricerca economico-ambientale sia per supportare direttamente le scelte dei decisori politici, delle imprese e del pubblico in generale, trova basi più solide nel SEEA 2012 e, in ambito europeo, in un apposito regolamento del Parlamento e del Consiglio (691/2011). L'Istat contribuisce agli sviluppi metodologici svolgendo un ruolo propulsivo nel contesto internazionale, in particolare in sede UNCEEA e all'interno di processi finalizzati all'estensione, nel Sistema Statistico Europeo (SSE), della base legale data dal regolamento 691/2011. Il round di innovazioni attualmente in corso, prossime ad entrare nell'iter legislativo per la loro adozione con regolamento europeo a seguito dell'approvazione da parte del Comitato del SSE, includono tre nuovi moduli di conti ambientali per i quali il rilascio obbligatorio di dati partirà a fine 2017; con essi saranno resi disponibili dati sulla spesa ambientale, le eco-industrie e i flussi fisici di energia, elaborati in un quadro di contabilità satellite e quindi collegati con il quadro centrale dei conti economici nazionali.

FEBRUARY 9th, 2013

PARALLEL SESSIONS 3 (09:00 – 11:00)

AGRICULTURE – ROOM EC7
Chairperson: Alessio D’Amato, Università di Roma Tor Vergata

CLIMATE CHANGE AND AGRICULTURE IN ITALY: A STOCHASTIC FRONTIERS ANALYSIS
Sabrina Auci: Università di Palermo
Co-Author(s): Donatella Vignani

Abstract. Since Italy is the second largest producer of “fruit and vegetable” in Europe - following Spain - offering a wide range of high quality products, a lot of typical mediterranean products officially recognized as IGP and DOP are produced and sold. The purpose of our work is the analysis of the effects of Climate Changes on “fruit and vegetable” cultivations because these plants need more water and could suffer for long drought periods. In other words, this paper evaluates the economic effects on agriculture of Climate Change in terms of rainfall and maximum temperatures, which are considered the main components of climate (IPCC, 2007; Solomon et al., 2007). In particular, we want to consider the implications of climate change on the efficiency of Italian regions in the period 1990-2010. In Italy, irrigated agriculture is the major water user accounting for more than 60% of total abstractions (OECD, 2006). In the South of Italy, the high water demand of agriculture and population is exacerbated by the limited natural availability of water resources and high climatic variability (MGWWG, 2005). Climate change is expected to intensify problems of water scarcity and irrigation requirements in all the Mediterranean region and in Italy in particular (IPCC, 2007; Goubanova and Li, 2006; Rodriguez Diaz et al., 2007). For all these reasons, we focus our attention on the Italian region efficiency during the period 1990 to 2010. In fact, in these last twenty years, the negative effects of CC has been increasing. Using the stochastic frontier approach to estimate the production functions of the Italian Regions, we are able to separate the effects of production inputs such as...
labour, physical and human capital from efficiency/inefficiency factors described by the previous literature as the main causes of desertification phenomenon. Moreover, we can disentangle distances from the efficient frontier dividing the error component in two aspects: the systematic and the noise component. Finally, we can rank the Italian Regions on the basis of these estimated technical inefficiency.

ETHANOL AND FIELD CROPS IN THE U.S.: PREDICTABILITY BEYOND THE MEAN?
Andrea Bastianin: Università di Milano – Bicocca; Fondazione Eni Enrico Mattei (FEEM)
Co-Author(s): Marzio Galeotti, Matteo Manera

Abstract. This paper is about the “Fuel vs Food Debate”, that is the tendency of prices of agricultural commodities to increase and become more volatile. The popular press and reports from international as well non-government organizations (World Bank; FAO; IFPRI; Oxfam) have been voicing the responsibility of the significant expansion of biofuel production in causing increases of food prices, thus putting at serious risk the plight of millions of poor people. Many studies have analysed the impact of biofuels on commodity food prices. As pointed out by Zilberman et al. (2012) there are two main strands in the literature on biofuels: one, that relies on time-series econometrics to analyse their linkages with food prices and another that, by means of simulations and theory-based methods, deals with the impact of their introduction on food prices. These authors draw two conclusions from their survey: first, time-series studies show that the price of biofuels is positively correlated with the prices of food and fuels, but that the reverse correlation is very weak; second, simulation-based analyses highlight that the introduction of biofuels may affect food prices and that this effect varies across regions and crops.

LA GESTIONE DELLE RISORSE IDRICHE IN AGRICOLTURA IN UN QUADRO DI INCERTEZZA. STRUMENTI ED ESPERIENZE
Guido M. Bazzani: CNR – Consiglio Nazionale delle Ricerche

Abstract. The Decision Support System for Irrigation (DSIRR) is a DSS for the economic-environmental assessment of agricultural activity focusing on irrigation, designed to answer both public and private needs. The program simulates the economically driven decision processes of farmers, permitting an accurate description of production and irrigation in terms of technology and agronomics. Distinct farm models can be constructed to describe the relevant production system in the catchment. Short and long term analyses can be conducted, the latter with endogenous investment choices. Solutions are found by applying multicriterial mathematical programming techniques. Farm models run under a graphical interface, which allows the user to quantify, by farm type, the utilization of water, labour and machinery, considering different types of soils, irrigation systems, water-yield functions and seasonality. Data are aggregated at catchment scale. Richness of information produced, flexibility and simplicity of use make DSIRR a useful tool for more sustainable agriculture and the definition of a sound water policy.

COMPARAZIONE DELLA SOSTENIBILITÀ DELL’AGRICOLTURA BIOLOGICA E CONVENZIONALE: MODELLO MULTICRITERIALE BASATO SU INDICATORI DERIVANTI DA SIMULAZIONI AZIENDALI
Maurizio Canavarri: Università di Bologna
Co-Author(s): Nicola Cantore, Sergio Albertazzi, Marco Della Chiara, Giuliano Vitali, Claudio Signorotti, Guido Baldoni, Concetta Cardillo, Antonella Trisorio, Guido Maria Bazzani, Roberta Spadoni, Domenico Regazzi

Abstract. La sostenibilità è un concetto che comprende molti aspetti, tanto quello ambientale quanto quello economico e sociale. Riuscire a identificare pratiche agricole sostenibili sotto tutti gli aspetti rimane complicato in virtù del costante trade off tra produzione a fini commerciali e gestione tutela del territorio, inteso sia come patrimonio ambientale che storico-culturale. Proprio per questo risulta opportuno valutare quale sia l’orientamento tecnico (biologico/convenzionale) più sostenibile a seconda dell’ambito di riferimento e del contesto locale. Tale approccio si basa sulla costruzione di un set di informazioni e dati specifici che possono essere riaggregati in maniera opportuna a seconda dell’analisi di cui necessita il policy maker per raggiungere obiettivi differenti nello spazio e nel tempo. A tal fine il Progetto PRIN BIOSUS ha intrapreso la stesura di un modello economico-ambientale su scala aziendale denominato MAD in grado di restituire indicatori differenti a seconda dell’ambito della sostenibilità considerato e parallelamente impostando un’analisi multicriteriale per comunicarne agevolmente gli output.
TECHNOLOGICAL CHANGE – ROOM EC1
Chairperson: Davide Antonioli, Università di Ferrara

A REGIONAL ANALYSIS OF RENEWABLE ENERGY PATENTING IN ITALY
Teodora Corsatea: JRC – IET Petten
Co-Author(s): Silvana Dalmazzone

Abstract. The paper investigates the mechanisms of induced innovation in the renewable energy industry in Italy. Descriptive analysis reveals a decoupling of innovation and production: significant RES-related innovation in Northern Italy, high levels of renewable energy production in Southern Italy. A panel analysis from 1997 to 2007 for the 20 Italian regions reveals that renewable-specific local public R&D expenditure is the main determinant of the renewable energy patenting pattern. Local financial incentives play a significant, but less important role. The wind and solar sources depend more on local public intervention than other RES such as biomass. The development of RES innovation activities appears to depend also on the political orientation of regional councils, thus confirming prior research on the role of social acceptance and political support in the development of RES.

WHO ARE THE GREEN INNOVATORS? AN EMPIRICAL ANALYSIS OF FIRM’S LEVEL FACTORS DRIVING ENVIRONMENTAL INNOVATION ADOPTION
Valentina De Marchi: Università di Padova
Co-Author(s): Roberto Grandinetti

Abstract. The attention on environmentally-benign changes of production and consumption systems have gained particular momentum in the current recession crisis, which has led to increasing calls for alternative development paths (Davies & Mullin, 2011). Environmental innovation (EI), which is increasingly at the centre of policy action, is the way through which firms may consolidate their competitive advantage by also reducing the ecological footprint. The literature on EIs has grown considerably in recent years but focused mainly on the exogenous factors determining their introduction and in particular on the role of environmental policies (e.g., Brunnermeier & Cohen, 2003; Cleff & Rennings, 1999) and of demand factors (Kammerer, 2009). Fewer studies have analyzed specifically firms’ strategic and managerial factors and technological characteristics, despite recent evidence suggests that they may be as important, if not more, than policy stringency in explaining the adoption of EIs (Borghesi et al., 2012; De Marchi, 2012; Horbach, 2008). Furthermore, little is known about the features of firms that introduce such innovations considering for different types of EIs. The introduction of different eco- innovations may have very different technical and managerial implications for firms, as supported also by recent evidence (Borghesi et al., 2012; Mazzanti & Zoboli, 2009, Wagner, 2008). Other evidence suggested that even demand-pull factors such as customer benefit are not contingent on industry or specific environmental issues but seems rather related to firm’s-internal factors and its strategic orientation (Kammerer, 2009).

DOES EXTERNAL KNOWLEDGE AFFECT ENVIRONMENTAL INNOVATIONS? AN EMPIRICAL INVESTIGATION ON ELEVEN EUROPEAN COUNTRIES.
Alberto Marzucchi, Università Cattolica del Sacro Cuore, Milano
Co-Author(s): Claudia Ghisetti, Sandro Montresor

Abstract. In the present work, we aim at investigating whether the adoption of “open innovation mode” (OIMs) is able to spur Environmental Innovation (EIs) at the firm level. Drawing on Salter and Laursen (2006), we consider different forms and features of OIMs. In particular, in addition to that of innovation cooperation, we also scrutinize the EI role of the breadth and depth of external information sourcing. Furthermore, we explore two new issues. First, we try to disentangle whether different forms of EIs (e.g. Innovation with environmental benefits from the production side–reduced materials, energy, Co2 footprint, soil, water, noise, air pollution; use of less hazardous substances and recyclying – and from the after sales side – reduced energy use, air, soil, water and noise pollution and better recycling after use) depend on different forms of OIM. Second, we investigate the process through which, once acquired, external knowledge is concretely transformed into actual (environmental) innovation performances. In order to do
that, drawing on a parallel field of research, we analyze the moderating role that, with respect to the EI drivers, is played by the firm's absorptive capacity (AC) of external knowledge (Cohen & Levanthal, 1989; Vinding, 2006), and by the social integration mechanisms (SIM) through which it is combined with the internal one (Zhara & George, 2002).

FROM ‘GREEN INVESTMENT’ TO INTERNATIONALIZATION: A FIRMLEVEL INVESTIGATION

Roberto Antonietti, University of Padova
Co-Author(s): Alberto Marzucchi

Abstract. Recent developments in the new international trade theory have stressed the relationship between firm heterogeneity and internationalisation status. The key prediction of these models is that firms with different levels of productivity—the main source of firm heterogeneity—will be generally engaged in different modes of internationalisation depending on the different levels of sunk costs incurred, for instance, in acquiring information on foreign markets and establishing distribution channels abroad (Melitz, 2003; Bernard and Jensen, 2004; Helpman et al., 2004; Melitz and Ottaviano, 2008). In these theoretical models, the sources of productivity are generally unexplained, leaving firm heterogeneity as exogenous. Only recently, some papers have attempted to open the ‘black box’ of firm heterogeneity, showing that internationalised firms are generally more innovative, use more knowledge-intensive workers, and are characterised by superior organisational and managerial practices (Castellani and Giovannetti, 2008, 2010; Castellani and Zanfei, 2007; Antonietti and Cainelli, 2011a), or are located within highly urbanized areas (Antonietti and Cainelli, 2011b).

CLIMATE CHANGE - 2 – ROOM Aula Magna

Chairperson: Aldo Ravazzi Douvan, Italian Ministry of Environment, Land & Sea, Directorate for Sustainable Development, Energy & Climate

THE DYNAMIC FEEDBACK OF CLIMATE CHANGE IMPACTS AND CATASTROPHIC RISK ON MITIGATION AND ADAPTATION INVESTMENTS

Francesco Bosello: Università di Milano, Fondazione Eni Enrico Mattei (FEEM)
Co-Author(s): Enrica De Cian, Licia Ferranna

Abstract. This paper contributes to the normative literature on mitigation and adaptation by framing the question of the optimal policy balance in the context of climate catastrophic risk. The analysis uses an integrated assessment model and it accounts for the endogenous link between the probability of experiencing a climate-change related catastrophic event and the temperature increase caused by GHG emissions. Results indicate that the presence of catastrophic risk induces substantial mitigation effort even in a non-cooperative setting where global cooperation on climate does not succeed. The policy balance is realigned from adaptation toward more mitigation, and the responsiveness of mitigation to changes in adaptation decreases. Compared to a world without climate catastrophes, risk reduces the substitutability between adaptation and mitigation because only mitigation can manage the catastrophic probability. In this setting, our analysis shows that adaptation funds and strategic unilateral commitments to adaptation are not the most efficient ways of buying emission reduction in less developed countries, though they could create some welfare gains and induce abatement in the recipient countries.

IMPACT OF CLIMATE CHANGE ON CROP YIELDS WITH IMPLICATIONS FOR FOOD SECURITY AND POVERTY ALLEVIATION

Shouro Dasgupta: Università Ca’ Foscari di Venezia

Abstract. The impact of climate changes is increasingly evident through movements of climatic variable such as temperature and precipitation. Quantification of this impact is necessary in order to better understand the economic implications these changes. According to the fourth assessment report of Intergovernmental Panel on Climate Change (IPCC), average global temperature has increased by 0.74 Celsius in the last 100 years; rainfall has trended downward during 1960–2000; and sea levels have risen
between 1 to 3 millimeters per year [IPCC, 2007]. The report also contends that temperature and precipitation are likely to increase in most countries around the world in the next two decades.

CLIMATE CHANGE, TOURISM AND WATER RESOURCES IN THE MEDITERRANEAN: A GENERAL EQUILIBRIUM ANALYSIS
Roberto Roson: Università Ca’ Foscari Venezia
Co-Author(s): Martina Sartori

Abstract. This paper presents and discusses some quantitative results obtained in assessing the economic impact of variations in tourism flows, induced by climate change, for some Mediterranean countries. Estimates by a regional climate model are used to build a Tourism Climate Index, which indicates the suitability of climate, in certain locations, for general outdoor activities. As climate change is expected to affect a number of variables like temperature, wind and precipitation, it will have consequences on the degree of attractiveness of touristic destinations. We estimate the macroeconomic consequences of changing tourism flows by means of a computable general equilibrium model. We found that more incoming tourists will increase income and welfare, but this phenomenon will also induce a change in the productive structure, with a decline in agriculture and manufacturing, partially compensated by an expansion of service industries. We found that, in most countries, the decline in agriculture entails a lower demand for water, counteracting the additional demand for water coming from tourists and bringing about a lower water consumption overall.

MULTI-SCALE LOCAL ENVIRONMENTAL ACCOUNTING: METHODOLOGICAL LESSONS FROM THE APPLICATION OF NAMEA AT SUB-NATIONAL LEVELS
Alessandra La Notte: Università di Torino
Co-Author(s): Silvana Dalmazzone

Abstract. Extending the application of integrated environmental and economic accounts from the national to the local level of government serves several purposes. They can be used not only as an instrument for communicating on the state of the environment and reporting the results of policies, but also as an operational tool – for setting the objectives and designing policies – if made available to the local authorities who have responsibility over the administration of natural resources, land use and conservation policies. The aim of the paper is to test the feasibility of applying hybrid flow accounts at the intermediate and local government levels. As an illustration, NAMEA for air emissions and wastes is applied to the Piedmont Region, the Province of Turin and the Municipality of Turin (covering the three nested levels of local government in Italy). The study identifies the main issues raised by multi-scale environmental accounting and provides an applied discussion of feasible solutions.