

IN THIS ISSUE

Spatial implications of climate change

The Regional Effects of CO₂-Emissions Reduction in China
by *Anping Chen* and *Nicolaas Groenewold* **PAGE 06**

Measuring the Costs of Climate Change with Residential Sorting Models
by *Christopher Timmins* **PAGE 07**

Getting it done: key ingredients for success of the Paris climate agreement
by *Thomas D. Peterson* **PAGE 08**

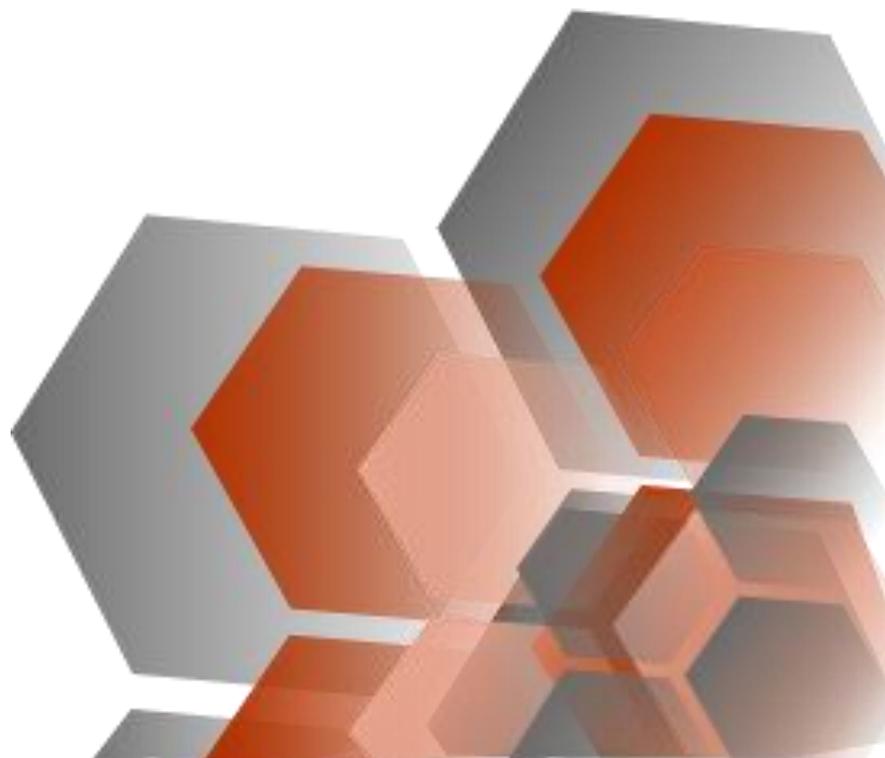


Meet the Fellows
Peter Batey
PAGE 12

Centres of Excellence in Regional Science:



Cornell University
PAGE 10



1. Introduction

1.1. Welcome from the RSAI President

by *Budy P. Resosudarmo*, Crawford School of Public Policy, ANU College of Asia & the Pacific (budy.resosudarmo@anu.edu.au)



Dear friends and colleagues,
Welcome to another edition of our newsletter. For those who are attending our 12th World Congress of RSAI in Goa, I appreciate your efforts and willingness to spend time communicating your research and ideas to other colleagues at the Congress. I certainly hope that you

enjoy the Congress and acquire stimulating ideas to take back to your institutions. I specially would like to thank and congratulate Sumana Bandyopadhyay, Lakshmi Sivaramakrishnan, S. T. Puttaraju, Debasis Patnaik and other members of the Organizing Committee in India for their preparations for the Congress. As for friends who are not able to attend this Congress, I certainly hope that you will be able to attend other RSAI conferences, meetings and workshops in the near future.

By conducting our world, supranational and national/sectional congresses/conferences, I do hope we can continue to deepen the knowledge of regional science and broaden the implementation of this knowledge to help solve various issues and problems around the world. We have been able to gradually increase our universal membership from approximately 3,500 members in 2011 to approximately 4,500 members in 2016. Our conferences hopefully will be our foundation for continuously expanding the membership of our association by ensuring the relevance of our conference topics regarding policy development, and by providing media for further collaboration between country sections in conducting existing activities as well as increasing the cooperation between academics from different countries. It is our goal to establish RSAI as a global association that significantly contributes to the sustainable improvement of the wellbeing of all people.

Hence, I would like to thank Declan Jordan for organizing the 58th ERSA Congress held on 28-31 August 2018 in Cork, José S. Rodríguez for organizing the 15th PRSCO Summer Institute held on 4-6 July 2018 in Lima, Dusan Paredes for organising the SOCHER-LARSA meeting to be held on 17-19 October 2018 in San Pedro de Atacama, and John Sporing for organizing the 65th North American Meetings of RSAI held on 7-10 November 2018 in San Antonio. I acknowledge the contributions of Vinko Mustra, Maria Giulia Pezzi, Faridah Djellal, Marites Tiongco, Nguyen Luu & Bao Doan, Stefan Rehak, Hera Susanti and Amir Neto in conducting our summer schools/trainings in Croatia, Italy, France, Philippines, Vietnam, Slovakia, Indonesia and USA, respectively, this year. Also, congratulations to Serena E.

Serrano for being elected as the 2nd President of LARSA and Mark Partridge for being elected as the President of NARSC.

I also appreciate the contributions of other colleagues who have conducted various activities related to regional science and our association this year.

See you all at our future conferences.

Regards,
Budy P. Resosudarmo

1.2. Welcome to the 12th World Congress of the Regional Science Association International, Goa, May 29-June 1, 2018

by *Sumana Bandyopadhyay*, Chair LoC, President, RSAI India; sumona_bm@yahoo.com; *Lakshmi Sivaramakrishnan*, Convener, RSAI India-12th WCRSA, 2018 (lakshmis@geography.jdvu.ac.in); and *Debasis Patnaik*, Jt. Convener (BITS Pilani- Goa Campus; marikesh@goa.bits-pilani.ac.in)



Greetings from India!

On behalf of the Local Organising Committee of the 12th World Congress of the Regional Science Association International, I would like to extend a warm welcome to all the delegates of the Congress who have inspired and encouraged us by confirming their participation. The response and enthusiasm from fifty countries is just overwhelming! We are preparing to welcome the "World" of Regional Science, here at Goa. I would like to thank each one of you for your response to this call.

The Programme includes ten plenary/semi-plenary and panel discussions, around twentyfive special sessions, close to one hundred general technical sessions. Every element of the Congress theme has been addressed and this is represented by the key speakers - the Congress opens with two important Keynote Addresses by Prof. Janet Kohlhasse and Prof. Andre Rodrigues Pose. The Congress will be inaugurated by Her Excellency the Governor of Goa, Dr. Bibek Debroy, the Chief Economic Advisor to the Hon'ble Prime Minister of India and the Surveyor General of India. Prof. Amitabh Kundu, eminent Indian economist, will deliver the closing remarks.

With just a few weeks to go for our grand event, I would like to apologise in advance for our shortcomings (I believe there will be many) and hope that everyone enjoys the challenging academic sessions that have been well thought out and carefully planned jointly by the RSAI team and the Local Organising Committee. We hope everyone attending the Congress can also take time out to enjoy the beauty and history of Goa, the host state. Goa is

dotted with endless scenic beaches (each with a different character) and is a beautiful blend of India and Europe by way of culture and heritage, the remnants of which are scattered all over the region. It will be the end of summer and on the verge of monsoons that are a unique feature of tropical Asia, so there may be short cool spells of rain – just so you may be prepared!

On behalf of the Government of Goa, our co-organiser, the Chief Town Planner of Goa, Dr. S.T. Puttaraju extends a warm welcome to all.

1.3. Welcome to the 58th European Regional Science Association Congress, Cork, August 28-31, 2018

by Declan Jordan, Co-Director of the Spatial and Regional Economics Research Centre, University College Cork, and Chairman of the LOC (D.Jordan@ucc.ie)

Dear colleagues,

The British and Irish Section is delighted to again host the ERSA Congress in 2018, this time in the beautiful city of Cork on the south coast of Ireland. Cork is an ancient, lively, and friendly city, immersed in history and heritage, and surrounded by the most beautiful scenery in the world. The city is culturally vibrant, and the EU Cultural and Creative Cities Monitor ranked the Cork capital as top of the league of small and medium-sized cities across Europe for its cultural amenities.



Cork is easily accessible with multiple daily direct flights to London, Amsterdam, Paris, and daily flights to other European destinations. Shannon airport is 100km away with direct flights to Boston, New York, Philadelphia, and Toronto. There is a direct coach connection between Cork city centre and Dublin airport that takes 2 ½ hours. Dublin airport has over 180 direct connections, including the US and Canada, Europe, Beijing, Hong Kong, Doha, Addis Ababa, and Abu Dhabi, among others. The Congress will take place from August 27 to August 31 on the lovely campus of University College Cork. It is hosted by the new Cork University Business School and its Spatial and Regional Economics Research Centre. The campus is located close to the heart of the city, but Cork's size means almost all amenities and events will be within a short strolling distance.

The Congress theme is "Places for People: Innovative, Inclusive, and Liveable Regions". There have been approximately 950 papers accepted for the Congress from participants in 54 countries. 50 special session proposals were received and this complements 24 general themes. The Local Organising Committee is very pleased with the quality and quantity of submissions, which will be organised into special, refereed, ordinary, and young regional scientist sessions.

This year we are delighted to link up with leading journals in the field for plenary, keynote, and roundtable sessions. Serge Rey will give the Spatial Economic Analysis Plenary Lecture. Eveline van Leeuwen will present the Regional Science Policy and Practice Keynote Lecture. Ron Martin will give the Papers in Regional Science Keynote Lecture and the Young Regional Scientists Roundtable is organised with REGIONS, the journal of ERSA.



ERSA 2018 promises to be an exceptional conference for the quality of papers, engagement with policy makers, opportunities for networking with colleagues, and keeping up to date with developments in the field. In addition, the Congress offers a range of social events to ensure a memorable visit to Cork. The opening ceremony on Tuesday August 28 will include a reception in the award-winning Glucksman Gallery. The get-together party on Wednesday August 29 takes place in Cork's new gaelic sports stadium, with a chance to relax, enjoy local beer, traditional Irish music, and try your hand at Ireland's famous national sport of hurling.

The Congress dinner closes the week's activities, and will be held in Cork City Hall in the centre of the city. This is a dramatic setting that will provide a wonderful memory of your time in Ireland's southern capital. A post-Congress tour and golf outing provides more reasons to prolong your stay after the intellectual efforts of the week. The Congress also offers technical excursions for delegates to learn more about the regional and urban challenges in the host city.

A full programme for accompanying persons is provided, with tours of the city, cultural amenities, and a visit to Europe's leading tourist attraction in 2017, Spike Island.

There is much more information about the Congress and how to register on the Congress website at www.ersa.org/events/58th-ersa-congress/ or by googling ERSA Cork. There is more information about the city at www.cork.ie and about the host university at www.ucc.ie

We are looking forward to welcoming you to the ERSA Congress in Cork.

1.4. Welcome from the Editors

by *Andrea Caragliu* (andrea.caragliu@polimi.it) and *Graham Clarke* (G.P.Clarke@leeds.ac.uk)



Andrea Caragliu



Graham Clarke

Welcome to another issue of the official newsletter of the Regional Science Association International.

In this issue we make a step back to a previous edition of the newsletter. In June 2011 we reflected on the spatial implications of climate change. At that time, because of the ongoing world financial crisis, several indicators wrongly suggested a decrease or at least a slowdown in the growth of some worrying outcomes of the process of economic growth that is now involves several large economies outside the traditional US-Japan-Europe triangle.

Seven years after, and with the economic crisis subsiding in certain locations, climate change is back on the research agenda. In this issue we asked several colleagues who published on these themes in some of our top journals (Papers in Regional Science, Journal of Regional Science, International Regional Science Review) to talk about their research-based thinking about the spatial implications of climate change. We have both learned a lot about this topic and we are equally hopeful this brief recap will stimulate us all to think of these topics in our own research.

For our usual Centre of Excellence in Regional Science, Kieran Donaghy and Mildred Warner talk about Regional Science at Cornell. While not a full-fledged independent department, Regional Science is entitled an interdisciplinary Ph.D. program at Cornell, with many colleagues stimulating a hot debate on spatial issues, as testified by the high number of dissertations successfully defended over the last few years.

Lastly, our issue RSAI Fellow is Peter Batey. His career offers a great example of the synergies between an academic and a government job; Peter has written a very interesting article which will hopefully inspire many young scholars to follow his path. Enjoy!

2. News from the RSAI Council

2.1. Action for RSPP: Meeting in Convento da Arrábida, February 2018, 16-18

by *Tomaz Ponce Dentinho*, RSAI Executive Director, and Regional Science Policy and Practice Editor-in-Chief (tomas.lc.dentinho@uac.pt)

The Editorial Team of *Regional Science Policy and Practice* recently met in Convento da Arrábida 40 Km South of Lisbon. Patrício Aroca, Emmanouil Tranos, Eduardo Haddad, Vicente Royuela, Neil Reid, Tomaz Dentinho and Jaime Bonet were there. Nearby were also Andrew Gillespie, Roger Stough, Eduardo Dias, Karima Kourtit and Teresa Borzacchiello. Peter Nijkamp, Henk Scholten, Maria Andrzejewska, Antonio Camara, Rui Pedro Julião and Teresa Romão, have joined the RSPP group for an ABC/RSPP meeting on Intelligent Spatial Policy in a Digital World. The latter had to leave earlier but the experience of joint meetings in a nice place was very fruitful.



The Editorial Board of RSPP reported that between March 2017 and March 2018 the journal enhanced its scientific content and broadened its geographical scope and launched a few special issues such as one on South Africa and others on Walled World, Spatial Justice, Innovation in Rural Area, Tourism in Rural Areas, Cases in Regional Development. This allowed us to overcome the reduced number of direct submissions. There was an improvement in the number of accepted articles from 12, in 2016, to 19, in 2017. The Cite Score Index of 2016 reached 1.17 and the Cite Score Track of 2017 is 0.78. Our publisher informed us that RSPP will receive an evaluation for an Impact Factor in July 2018 and, if we will get it, we are confident that more submissions will come.



The challenge identified at the workshop is to promote the papers published in 2017, to ameliorate the texts in process in 2018 and to invite keynote speakers of Plenary Sessions promoted by RSPP in RSAI Conferences. Luc Tellier will be the RSPP key speaker in the World Congress of Goa. Eveline Van Leuven will be our voice at the ERSACongress of Cork. The key speakers for LARSA in Chile, PRSCO in Peru and NARSC the US are also very promising. We are also searching for review papers on regional science methodologies that illustrate exemplar applications of Spatial Econometrics, CGE Modelling, CBA Environmental Territorial Services, Network Analysis, Public Participation and Governance and Planning Methods.

Finally, the dream of becoming the journal of “territorial medicine” is still alive so that regional science can have a methodological rooted scientific say on secession and dependence, on war and slavery, on poverty and disease, on spatial justice and integration, on sustainability and congestion.

2.2. Geographic breakdown of RSAI Membership

by Tomaz Ponce Dentinho, RSAI Executive Director, and Regional Science Policy and Practice Editor-in-Chief (tomas.lc.dentinho@uac.pt)

RSAI now has around 4,500 members. Nevertheless, the enrolment and participation of members substantially varies between RSAI countries. The US have the biggest participation with more than 1,000 members; this number is obtained by assuming a two-year registration to minimize the effects of membership fluctuations based on the yearly NARSC congress. Second comes Japan with a steady contribution throughout the years. Interestingly, Spain is the largest section in Europe, while India also shows great potential to increase its membership (see Fig 1).

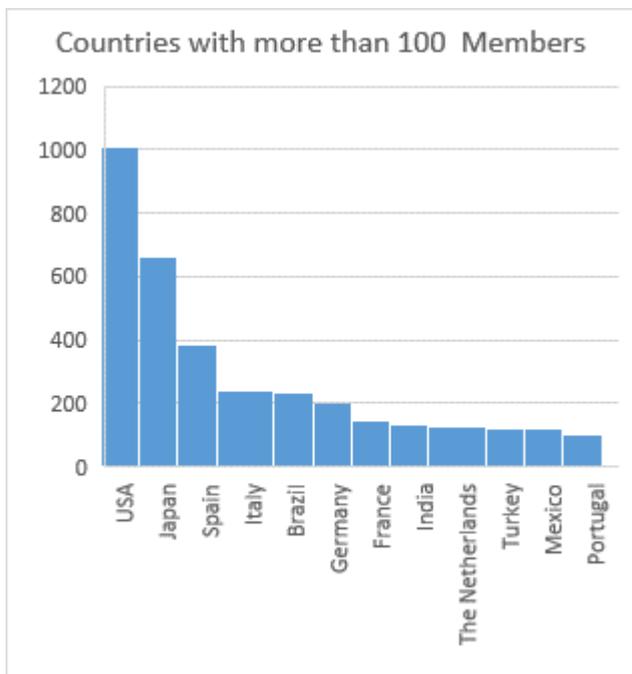


Figure 1: Countries with more than 100 RSAI Members

Figure 2 presents the number of RSAI members per million residents. The aim of this second indicator is to show the potential influence of Regional Science in each country and highlight the number of members reachable by an active section taking into account that the membership fees vary according to income per capita of the country. If one agrees on a benchmark of five members per million residents, then some sections could definitely improve their membership and RSAI could potentially reach more than 20,000 members around the world!

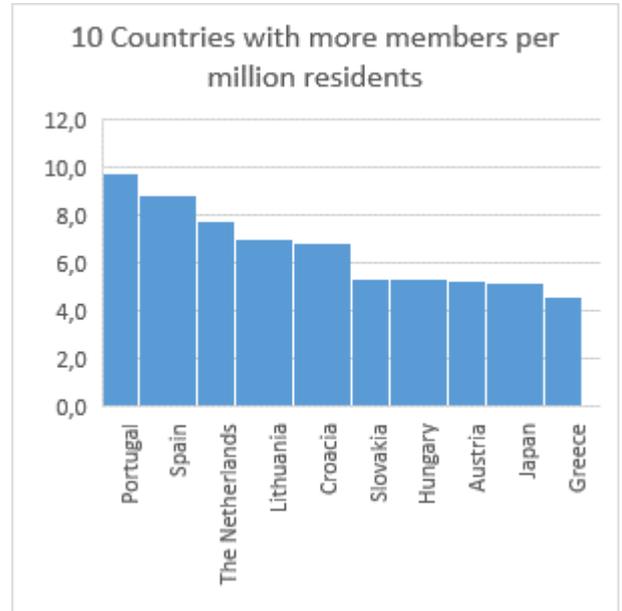


Figure 2: Countries with more RSAI members per million residents

Lastly, Figure 3 shows the degree of participation in the elections for Councillors at Large per country, for countries with more than 50 members. Taiwan comes first with 50% of its members voting for the Councillor at large, but much is still left to do regarding the interaction between RSAI Council and the Members.

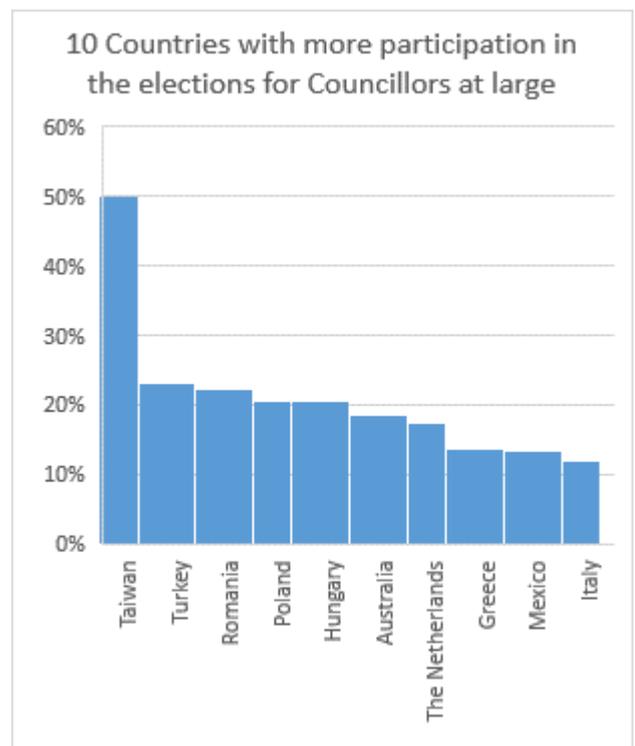


Fig 3: Degree of participation in elections for Councillors at Large

There is not any award for regional science countries or sections. However, there are good examples looking only at these simple numbers. More than one hundred members represents a sensible scale to have a national journal and national meetings. Sufficient members per million residents indicates Regional Science has an important role to play in science and policy in the country. A relatively high participation in RSAI elections shows the involvement in the life of the association.

3. Spatial implications of climate change

3.1. The Regional Effects of CO₂-Emissions Reduction in China

by Anping Chen, Jinan University (anping.chen@hotmail.com) and Nicolaas Groenewold, University of Western Australia (nic.groenewold@uwa.edu.au)



China's carbon dioxide (CO₂) emissions have grown at an average annual rate of about 5 per cent during the period since reforms began in 1978. In 2006 China overtook the US as the largest single emitter of CO₂. Although its emissions have begun to decline since 2014, China still accounts for 27% of world emissions in 2016 according to estimates by BP (BP, 2017). The rapid growth of carbon emissions is claimed to be one important factor which has contributed to national environmental degradation in China and which has also spilled over to the global environment. As a result, China has been under considerable pressure to reduce its CO₂ emissions. The central government in 2009 promised to cut CO₂ emissions per unit of GDP by 40-50% by 2020 compared with the 2005 level and in 2015 further promised to cut them by 60-65% by 2030. Policy-makers are acutely aware of the possible adverse economic consequences of emissions cuts and an important part of this concern is the regional dimension. Given that emission-reduction policies will shift economic activity from high-emission-intensity to low-emission-intensity production, it can be expected to result in widespread industrial reallocation within the economy, including inter-regional shifts in production. These inter-regional effects may be expected, in turn, to influence inter-regional disparities, which are already acute in China.

We analysed the regional effects of CO₂ emissions reduction in China in a series of small two-region theoretical models designed to capture some of the essential features of the Chinese economy (Chen and Groenewold, 2013, 2014, 2015). We explored three popular policies: a cap-and-trade scheme (CTS), an emissions tax and a subsidy for abatement activity. In the case of a CTS-based policy, it matters crucially who gets the emission permit revenue and what they spend it on. If the government focusses on conventional measures of disparities such as income or per capita output to assess the policy outcomes, then a CTS-based cut in the cap with the revenue allocated to the regional governments for infrastructure spending (as suggested by the Clean Development Mechanism, CDM, applied to regions) is a clear winner – it increases output in both regions and generally increases profits, incomes and private consumption and reduces the inter-regional disparities. However, ironically, this policy reduces welfare for the households in the poorer region, so hurting the very people the government sets out to help. The effects of this policy on the regional gap are shown in Figure 1.

On the other hand, if the government targets the welfare gap, then a CTS-based policy with the revenue being spent on government consumption dominates the other policies; besides, this is the only policy of the ones considered in which the welfare of interior households actually increases. But, at the same time, the income and output per capita gaps widen (see Figure 2). In fact, wages, profits, income and private consumption all fall in both regions which might lead to considerable resistance to such a policy, despite the welfare gain to the poorer region.

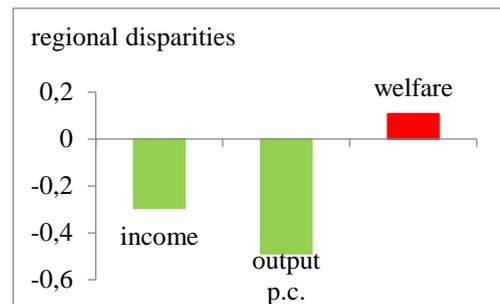


Figure 1: The CDM Policy

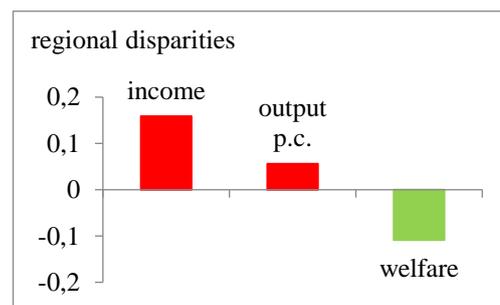


Figure 2: CTS with Revenue on Consumption

Turning to taxes and subsidies, we found that a centrally imposed emissions tax has the same effects on all relevant variables as

an abatement subsidy that reduces overall emissions by the same amount if we assume the availability of lump-sum profits taxes and subsidies for balancing the government's budget constraint. Therefore, we focused on the subsidy case and consider alternative financing assumptions. The simulation results show that welfare decreases in both regions in both the short run and the long run, irrespective of whether the subsidies are financed by expenditure cuts or tax increases. If the subsidy is paid for by a reduction in government consumption, the welfare gap narrows, but only because welfare falls by more in the coast than it does in the interior. If, on the other hand, the subsidy is financed by a reduction in infrastructure expenditure the output and income gaps narrow; but in this case the welfare gap widens and welfare falls in both regions. Thus, the financing method has important effects on disparities and the implication of emissions-control policy for disparities depends importantly on the way in which disparities are measured.

We conclude that, in designing emissions-reduction policies, governments should consider the possibly adverse consequences for inter-regional disparities. Moreover, when considering regional disparities, it is important for governments first to decide on their target variable(s): welfare or more readily measurable economic variables such as income or per capita output. Having decided this question, they need to play careful attention to alternative financing methods. Finally, governments must decide not only on the appropriate gap measure but also on the time horizon of their policy objectives to avoid possible over-reaction to short-run movements.

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3.2. Measuring the Costs of Climate Change with Residential Sorting Models

by Christopher Timmins, Duke University (christopher.timmins@duke.edu)

The accumulation of anthropogenic greenhouse gases (carbon dioxide, methane, chlorofluorocarbons, nitrous oxides) has been scientifically shown to trap radiant energy from the sun in the earth's atmosphere, raising temperatures and causing a complicated array of changes to other facets of climate. These changes are expected to impact agriculture, ecosystems, coastal land, human health, and a



variety of climate amenities. Quantifying the benefits associated with avoiding these changes is required for cost-benefit analysis of the many potential policies that we might undertake today to reduce carbon emissions. This has become an important area of research in environmental economics.

Health and amenity impacts of climate are likely to be captured by the tradeoffs that people make today in housing and labor markets. In this way, hedonic analysis can be used to explore these costs. Wage hedonics (Roback, 1982) was an approach developed to value amenities that vary across labor markets, as is the case with climate amenities. The approach that we adopted in "*If You Cannot Take the Heat, Get Out of the Cerrado... Recovering the Equilibrium Amenity Cost of Nonmarginal Climate Change in Brazil*" sought to extend those methods to value the change in climate amenities while accounting for equilibrium impacts on markets for labor and locally traded goods.

Accounting for equilibrium impacts is important because general circulation models (GCMs) of climate change typically predict non-marginal changes in temperature and rainfall. When we wrote this paper, predicted temperature changes in Brazil ranged between 1-4.5 C along with +/- 30% changes in precipitation. Traditional non-market valuation techniques have struggled with non-marginal changes, both because individuals' marginal willingnesses to pay may vary with the quantity of the amenity being consumed, and because some determinants of utility are endogenous and will change if individuals re-optimize (e.g., move around in response to the change). Indeed, these techniques only characterize an individual's preferences in a small range around her observed choice and do not allow for any responses to non-marginal changes. Valuing large changes requires measurement of welfare effects in equilibrium (both in labor and housing markets). Accounting for all of these factors has salient impacts on our estimated impacts of climate change, especially on the distribution of those impacts.

The equilibrium sorting model that we employ begins with the decision of a household head about where to live. This decision is made to maximize utility, which depends upon consumption of housing, a numeraire commodity, and a collection of amenities that includes climate attributes. Given one's skills, where one lives will determine one's wage. Along with the choice of a house, wage determines consumption of the numeraire commodity. In the end, this means that individuals are forced to think about labor and housing markets in deciding where to locate. This feature is shared with the wage hedonic literature.

Other non-monetary determinants of the location choice include a long-run migration cost measured relative to one's birth state and a variety of amenities. Traditional hedonic models are internally inconsistent with respect to their treatment of non-marginal changes. In particular, they don't allow for any sort of movement (i.e., re-optimization) in response to a large change. However, they assume that individuals were unconstrained in their location decisions when making the choices that led to the equilibrium observed in the data. In the equilibrium sorting framework, we allow individuals to re-optimize in response to

large changes while also allowing for “stickiness” in the form of empirically estimated migration costs.

In addition to climate and a variety of other local amenities, the list of attributes that might affect the location decision includes population density. Population density serves two roles in the model. First, it is used to control for the inelastic supply of housing – i.e., as population density increases, we would expect prices to rise (a sort of congestion effect). Data on house prices in Brazil (and in many developing countries) are poor and population density serves as a useful proxy. Second, in Brazil (and many other developing countries), certain amenities are only available in urban centers. Data constraints make it difficult to control for many of these amenities explicitly. The problem with including population density explicitly in an equilibrium sorting model is that it is endogenous – places that are attractive for some reason that is unobservable to the researcher will attract a dense population. A naive model will mistakenly attribute those unobservables to population density, biasing the model towards estimates of agglomeration effects. In the estimation, we employ an instrumental variables strategy in a discrete choice context using techniques based on Bayer and Timmins (2007), which exploits information in exogenous choice set variation.

Preferences are recovered from observed location decisions by maximizing a likelihood function that is based on this model. With those estimates and an estimate of the demand curve for labor in each location (which turns out to be easy to get, exploiting the same instrumental variables strategy described above), we are ready to predict how all agents would react to non-marginal climate change (allowing for migration). Wages and housing prices are allowed to update in response to that migration. Given a simulated equilibrium under climate change, one can then ask, for each individual, what would have been the change in income that would have yielded the same change in utility. This equivalent variation in income is a commonly used monetized measure of welfare.

Results suggest that climate change will have costs for Brazilians, but less for those in the south region, further from the equator. The model allows us to ask how these costs would differ if migration were “turned off” – i.e., forcing all individuals to remain in their current location. This increases the costs to those in regions most adversely affected (i.e., closer to the equator) but improves the situation further for those in the southern latitudes, as they no longer face competition from migrants fleeing from the north for jobs and houses. Without migration, the additional costs to those in the north are greater than the additional savings to those in the south, raising the overall costs of climate change.

The model also allows us to drop migration costs altogether. Here, individuals are free to move anywhere, and many more residents of northern states subsequently move to the south when confronted with climate change. The implication of this is that residents of the south would then lose from climate change, owing mainly to higher housing prices and lower wages brought about by the influx of displaced northern residents. This means that, in reality, it is migration costs that save those in the south from suffering when climate change does occur.

There were a number of limitations to our analysis. First, we consider a simple world in which all the current residents of Brazil wake up the next day to find that climate change has occurred; in reality, climate change will take place over many decades and across multiple generations. This is a complication facing the climate change literature more generally. Second, we take an admittedly minimalist approach to the treatment of firm behavior, simply modeling “firms” as labor demand functions in each location, differentiated by education level. More recent efforts (Fan, Fisher-Vanden, and Klaiber, 2018) have incorporated a computational general equilibrium (CGE) model into a similar sorting model structure applied to the U.S.. This allows for rich sectoral variation in the equilibrium responses of firms to workers’ migration decisions. To some extent, the use of CGE models in this way comes at the expense of transparency, as the complexity of these models is hard to summarize for a reader, but it is hard to argue with the value of what they provide.

Measuring the consequences of climate change continues to be an active area of research. Given the magnitude of predicted climate change, equilibrium sorting models can play an important role in this arena given their ability to model feedback effects in labor and housing markets. Our research in this area suggests that these feedbacks are of first-order importance, particularly in determining who wins and who loses from global warming.

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3.3. Getting it done: key ingredients for success of the Paris climate agreement

by *Thomas D. Peterson*, President and CEO Center for Climate Strategies, Adjunct Professor Johns Hopkins University Energy Policy and Climate Center (tpeterson@climatestrategies.us)



The watchword for success of the COP21 Paris Agreement remains “implementation” but how best to achieve it? Recent commentaries and analyses note the gap between current goals expressed in Nationally Determined Contributions (NDCs) and their cumulative shortfall in comparison to the total greenhouse gas (GHG) tonnage

reductions required to meet 2-degree stabilization goals of the Paris Agreement. Currently, global commitments would only stabilize the climate at 2.6 to 3.1 degrees if fully implemented. The gaps involved in meeting greater levels of ambition to achieve the hoped 1.5-degree stabilization goals are even greater.

However, there also is a significant gap in many nations between stated goals and the ability and willpower to actually meet them – creating a virtual double whammy in terms of climate stabilization goals. How should policy makers and practitioners respond?

One place to start might be listening with a trained ear to those who are ultimately responsible for making change. This includes high level public officials, typically elected or appointed to primary areas of national governance, as well as their stakeholder constituencies who largely guide forward movements at the end of the day. In many dozens of meetings with government and stakeholder representatives in both developed and developing countries, we hear a familiar response from them.

First, climate change action is not a priority on par with other national (or subnational) goals such as economic development. Second, for it to become an actionable priority, some key conditions must be met. These generally include: 1) alignment of climate change with existing national goals; 2) assurance of new manpower and money to get the job done; 3) better public support for change, often requiring more effective public participation; 4) freedom to choose the self-determined policy response measures best suited for home turf; and 5) access to truly effective development and implementation tools for home use by home teams.

Two themes cut across these key conditions that both practitioners and policy makers can use better to everyone's advantage. The first is multi objective decision making (MODM), the ability to create policy choices and outcomes that achieve more than one goal at the same time and enable the most important existing goals to be met without tradeoffs – or better yet to be enhanced through “win-win” synergies. The second is experiential learning, or “*learning by doing*” approaches to capacity building that more fully equip and empower local planning and technical teams to effectively create implementable actions that are, in fact, quite difficult and complex in many cases. Field experience with capacity building suggests that we could do more in the realm of MODM and experiential learning, and that enhanced approaches to capacity building and policy development using these concepts and practices would yield improved results in terms of on the ground progress. The good news: these and related practices are well established and can be applied to climate change action. The bad news: they haven't been mainstreamed for climate action, particularly where GHG management has been the dominant paradigm.

The need for MODM in international development, including sustainable development, has become well accepted (but arguably needs technique enhancement). For instance, the government of Bangladesh has 51 formal Sustainable Development Goals (SDGs), only one of which is definably low

carbon in nature (the highly successful Solar Home System program). Historically, Bangladesh has approached SDGs at a project rather than program level, and is now beginning to apply broader market scale up techniques for national aggregation of projects with assistance of the Bank of Bangladesh Sustainable Finance Department.

Unfortunately, the nation has not yet adopted a full portfolio of low carbon development goals to match its SDGs portfolio or integrate objectives of both programs. The same MODM procedures that are recognized as essential to SDGs could readily be applied to the nation's NDC, but the crossover has not yet occurred. With leadership commitment to diverse goal attainment and experiential learning, this could happen in a relatively straightforward manner and timeline.

Another frank reality is that in many countries, government planning is driven by non-participatory studies, such as by consultants or policy units and institutions, with less than ideal results in terms of policy adoption. The not so well kept secret in many developing and emerging nations is that their NDCs were developed through classic parachute studies by foreign governments and consultants (including some whom have never set foot in the recipient nations). In public, these are acclaimed. In private, they are often rejected as unrealistic and off base, or become the basis for resistance. They could be used as a starting place for procedures to further develop and implement the NDCs with the clear understanding that country level teams need to take over, and they need the right kind of help to succeed.

To this end, experiential learning offers a more palatable and effective relationship between foreign (or even domestic) experts, and local planning and technical teams. Initial training and capacity building can be jointly conducted by inside and outside experts, followed by localized learning by doing applications on NDCs that embrace country driven MODM targeted to actual implementation.

Yes, this works. To meet multi objective goals of the 12th and 13th Five Year Plans, for instance, the China Subnational Low Carbon Development Program has combined procedures of co-development of tools and templates through cooperation by domestic and international experts, followed by jointly conducted training and capacity building, then local pilots supported through cooperative learning by doing assistance, and ultimately scale up programs in jurisdictions. This concept is on its way to mainstreaming.

The Africa LEDS Project is following a similar but unique process to support nations in Sub Saharan Africa through training and technical assistance to national modeling teams and task forces. It is structured to start with joint development of tools and instruction customized to countries' needs, followed by pilot studies that involve national scale implementation of project based options, and ultimately broader NDC development and customization to national and regional needs.

The success of this program appears to rest on effective local use of MODM to capture the realistic needs of policy makers, and the use of experiential learning through local teams to empower

self-determination. Both are driven by fundamental conditions needed for success, and hold the potential for building new levels and types of willpower.

Time will tell if such approaches work for low carbon development worldwide and if we meet Paris Agreement goals. However, past experiences may have rendered a verdict on approaches that don't use MODM and experiential learning. It looks like they aren't getting the job done.

4. Centres of Excellence in Regional Science: Cornell University

by Kieran Donaghy, FRSAI, Director of Graduate Studies (DGS) in Regional Science (kp23@cornell.edu), and Mildred Warner (mew15@cornell.edu)



Regional Science—which Walter Isard defined as “*the careful and patient study of social problems with regional or spatial dimensions, employing diverse combinations of analytical and empirical research*”—is a graduate field—not a department—at Cornell University. Graduate fields at Cornell comprise faculty members from a number of departments who come together around shared intellectual interests and may include faculty members from different colleges or campuses. Graduate students at Cornell are admitted to fields of study; faculty members of graduate fields establish curriculum requirements. It is possible for graduate students in an interdisciplinary field, such as regional science, to take courses for which they are qualified in any unit of the university and to choose major and minor areas of study without regard to traditional departmental organizational lines.



The graduate field of Regional Science was formed in 1972 by Stan Czamanski, Walter Isard, Barclay Jones, and Sid Saltzman under the administrative auspices of the Department of City and Regional Planning. Other early members of the field faculty included economists Eric Thorbecke and Henry Wan and economist/engineer Dick Schuler. The faculty of the graduate field now includes 25 faculty members from eight academic departments in five colleges. Discussed below are research

interests and activities of some of the current field faculty, whose principal appointments are in City and Regional Planning (CRP) and other different departments.

Much of the research of Lindsay Anderson (Biological and Environmental Engineering), an expert in dynamic stochastic optimization and simulation, concerns the challenges of integrating renewable energy into existing energy markets. Iwan Azis (CRP) is studying the mechanisms that led to the 2008 global crisis and implications of the crisis for policy responses at regional and national levels, its effects on regional integration, and its welfare impacts at the sub-national level. Urban economist Nancy Brooks (CRP) has been analyzing data on racial profiling by law enforcement officers in a small rural state to identify factors affecting officers' behavior. Suzanne Lanyi Charles (CRP), an expert on redevelopment and gentrification in postwar suburban neighborhoods, has been conducting a longitudinal study of the effects of 'teardowns and rebuilds' on the housing stock of the metropolitan Chicago area. Kieran Donaghy (CRP) is writing a book with several post-doctoral research associates on the co-evolution of commodity flows, economic geography, and patterns of emissions associated with supply chains. Oliver Gao (Civil and Environmental Engineering) directs a new multi-university Center for Transportation, Environment, and Community Health (CTECH), which pursues research and innovation to support sustainable mobility of people and goods while preserving the environment and improving community health. Shanjun Li (Applied Economics and Management) has been conducting a welfare analysis of vehicle license allocations in Beijing and Shanghai and examining potential regional effects of China's 'Belt and Road Initiative.' Yuri Mansury (presently on the faculty of the Illinois Institute of Technology, but still a member of the graduate field) has been pursuing studies of complexity in spatial networks and exploring applications of urban and regional 'big data' sets. Mildred Warner's (CRP) research is intended to meet the needs of local governments for information on restructuring trends and innovations in public sector service provision, public-private partnerships, privatization, inter-municipal cooperation, contracting back-in, and planning across generations.



In its 46 years of existence the graduate field has conferred more than 70 PhD and 90 MA or MS degrees, with well over half of the degrees being awarded to students from outside the United States. Students have hailed from Australia, Canada, Chile, China, Colombia, India, Indonesia, Israel, Japan, Malaysia, Mexico, New Zealand, Nigeria, Norway, Singapore, South Korea, Taiwan, Thailand, and Turkey, as well as the United States. In recent decades the steady-state size of the program has ranged between 15 and 20 students in residence.

Graduates of the PhD program have gone on to become professors at major academic institutions around the world. Cornell Regional Science graduates also hold research positions in international organizations and research institutes. Many work at the highest levels of policy analysis in national and regional government agencies and corporations.

While each student's program of study is designed to meet his or her individual educational objectives, there are some subjects commonly studied by Regional Science students (although not all). These include microeconomic principles, open-economy macroeconomic principles and international trade theory, industrial location theory and economic geography, mathematical economics, applied econometrics (including spatial econometrics), GIS and spatial modeling (including remote sensing and geo-computational methods), methods of operations research, various forms of impact analysis (input-output analysis, social accounting matrix analysis, and computable general equilibrium modeling), transportation and network modeling, agent-based modeling, and conflict management procedures. Increasingly students are also taking courses in demography, developmental sociology, government, industrial labor relations, and behavioral economics. Examples of programs of study can be found, for the Master of Science and Master of Arts degree programs and for the Doctor of Philosophy program, at aap.cornell.edu/academics/crp/graduate/regional-science.

Some examples of research topics examined in recent graduates' dissertations are as follows:

- The relationship between an individual's well-being and the extent of his or her integration into social support networks in Mexico.
- Electricity planning in Thailand: an integrated top-down and bottom-up CGE modeling analysis.
- Reducing national greenhouse gas emissions fairly: a differential game analysis.
- Studying regional impacts of national macro-prudential policies with a DSGE model.
- Coordinating monetary and fiscal policies in a multi-regional macro-economy.
- Resource-based sustainable development through energy planning in Nigeria.
- Churning, power laws, and inequality in a spatial agent-based model of social networks.
- Continuous and discrete spatial heterogeneity: spatial econometric modeling strategies and simulations.

- The impact of mass transit improvements on residential land development values in Bangkok.
- Time inclusion in structural path analysis with a case study of the 2008 Indonesian SAM.
- The impact of the built environment on the location choices of the creative class.
- Vulnerability analysis of New York City's motor fuel supply chain network.

This is a particularly exciting time for Regional Science research at Cornell, because faculty members and students now have the tools to conduct more finely disaggregated analyses across large data samples, to assess a variety of problems of spatial mismatch, and to understand the challenges posed by aging populations and climate change for economic development and planning. This observation is supported by several examples taken from the work of Mildred Warner and her students.

Dr. Warner and her students have produced a stream of important work on local government fiscal stress. Theories of fiscal federalism propose a rational system of expenditure assignment and revenue authority across scales of government and assume a common response across space. But Dr. Warner and her students find considerable variation—across space and over time. Using neural network algorithms and, more recently, geographically and temporally weighted regression, they have found evidence of vicious and virtuous cycles across local governments. While local fiscal effort and intergovernmental aid promote development in some cities, in others, they yield a vicious cycle of underinvestment and decline (as in the US), or overinvestment in unproductive assets (as in Ghost Cities in China). The ability to use geographically and temporally weighted regressions is uncovering a diversity of responses and bringing forward challenges to the received theory of Fiscal Federalism. Recent work in this area has been published in *Environment and Planning C*, *Environment and Planning A*, and *Cambridge Journal of Regions, Economy and Society*.

In addition, Dr. Warner and her students are using Regional Science tools to assess spatial mismatch between human capital and housing, housing and jobs, and personal demand and local amenities. Past theories of spatial mismatch could not take into account the full variety in local responses. By linking county pairs across the US, however, Dr. Warner and her students can unpack people's mobility and differentiate the effects of structural conditions on people's decisions to migrate or commute.

Dr. Warner and her students are also assessing the dual challenges of population aging and climate change to economic development and planning with national surveys in the US and analysis across the rural-urban spectrum. This research has led to recent publications in *Economic Development Quarterly*, *Community Development*, and the *Journal of Planning Education and Research*.

In a popular book Thomas Friedman claimed the "World is Flat". But studies by Dr. Warner and her students show that in fact the world is spikey and those differences are becoming more striking. This observation has implications for economic

development, sustainability policy and local finance. The Graduate Field of Regional Science is proud to have such an excellent research group working on these issues at Cornell. We welcome inquiries about and applications to our programs of study. DGS Kieran Donaghy may be contacted at kpd23@cornell.edu.

5. Meet the Fellows: Peter Batey

I grew up in the north of England and went to school in Bury where I took 'A' Levels in maths, physics and geography in the sixth form. After leaving school in the mid-1960s, I took an undergraduate degree in geography at Sheffield University and a Master's degree in planning, at Liverpool University. I was clearly a product of the quantitative revolution in geography which also affected planning and, in particular, planning methodology. My background in maths was to prove very useful in picking up the latest analytical methods and I was extremely fortunate that in my first two jobs, working in local authority planning departments in the early 1970s, I had a marvellous opportunity to use these methods in a practical context.



The first two years of the geography degree at Sheffield were unremarkable and really quite dull. The final year, however, proved to be a turning point when a new professor was appointed, Stan Gregory. Gregory had made his name at Liverpool University as one of the leading lights in quantitative geography. His textbook on statistical methods had a major influence on British geography in the 1960s. I took full advantage of Gregory's courses, including a Master's-level module in multivariate statistics and what was surely a unique course on water resources development. I found this invaluable much later in my career when I began my involvement in the Mersey Basin Campaign, cleaning up North West England's heavily-polluted rivers.

I wanted a career in which I could use geography and, with this in mind, had begun to think of doing a Master's degree in planning. It was Stan Gregory again who steered me to Liverpool where one of his former students Ian Masser, by now a planning academic, was committed to re-structuring the Master's curriculum to include analytical planning techniques. Ian deserves great credit for making me aware of the Regional Science Association and introducing me to the burgeoning regional science literature. Reflecting this, my Master's dissertation on zoning system design combined two areas of

regional science: geodemographics and spatial interaction modelling.

The early years of my professional career were spent in local government working in two local authority planning departments, Lancashire and Greater Manchester, in North West England. At the time large planning departments like these had a programme of applied research used to support strategic plan-making. Indeed, it is no exaggeration to say that large local authorities were far more active in planning research than most university planning schools. There was a genuine interest in fresh ideas that would advance the methods of plan-making. Despite being a new recruit and still in my early twenties, I was given a remarkable amount of freedom to work on a range of regional science methods and models, managing the projects myself. At Lancashire, for example, I had the opportunity in the early 1970s to develop and apply a Lowry model for the sub-regional plan of North East Lancashire. And, in the lead-up to a major local government reorganization in 1974, I had responsibility for carrying out two geodemographic classifications of small area census data for the new metropolitan authority, Greater Manchester Council, breaking new ground in planning practice. Soon afterwards, working as a transport planner, I led a project to develop and test the impact of long-term land-use scenarios upon the transport system of Greater Manchester using the SELNEC Model first developed by regional scientist Alan Wilson in the UK Government's Mathematical Advisory Unit in the mid-1960s.

I have never regretted the time I spent in local authorities and I benefited enormously from the excellent environment they gave in which to do good applied work. However, I gradually realized that my future career lay in universities and that I needed to make the transition sooner rather than later. The ideal opportunity arose when Masser moved to a chair at the University of Utrecht in 1975. I was fortunate enough to be offered the lectureship he vacated at Liverpool.

Other recent appointments at Liverpool were Moss Madden and Peter Brown, both of whom had studied civil engineering before moving into planning and were therefore, like me, relatively numerate. Ian Masser, who had planted the regional science seed in all three of us, remained our mentor, in the absence of Liverpool-based research active senior colleagues. I developed a very productive working relationship with both of them, but on different topics.



The late Moss Madden



Peter Brown

Moss and I shared an interest in the integrated forecasting of population and economic activity. Up to that point, strategic planners generally made separate population and employment forecasts which were unlikely to be consistent one with another. Our major contribution to solving this problem came in the design and construction of a series of regional extended input-output models, adding demographic variables to the well-known Leontief inter-industry model. It led to us proposing the so-called Batey-Madden extended model which allows more realistic impact multipliers to be calculated by recognising the differences in income and consumption associated with households containing varying combinations of employed and unemployed workers. We collaborated on more than twenty papers in which the basic model was extended further and used in a number of practical situations, including measurement of the economic impact of regional demographic change and impact studies of airport expansion and tidal barrage construction. The paper I am most proud of presents a detailed structural comparison of nine different extended models (in *Environment and Planning A*, 17 (1), 1985). It was written during a sabbatical I spent at the University of Illinois and benefited greatly from the encouragement of Geoff Hewings, as did all of our work on input-output analysis.

My work with Peter Brown had a quite different focus. It built upon the earlier research I had done on geodemographic classification systems in Greater Manchester. The new research developed national classifications of residential neighbourhoods based on large amounts of socio-economic and demographic census data. Initially involving collaboration with Stan Openshaw, these geodemographic classifications – known as Super Profiles (1981 and 1991 censuses) and People and Places (2001 and 2011 censuses) - have been applied in a range of public policy and private sector commercial contexts over a thirty-year period. One of the most important applications was in the spatial targeting of urban policy initiatives and the measurement of targeting efficiency.

In the late 1980s Peter Brown and I bid successfully with colleagues from Manchester University for a regional research laboratory (RRL) as part of a major national initiative to promote social science GIS research, funded by the UK Economic and Social Research Council. The Liverpool-Manchester RRL had a specific remit to carry out evaluations of urban policy and was encouraged to become self-funding by developing a portfolio of applied research projects, working with a wide range of public sector agencies. Throughout the 1990s there was a healthy demand for urban policy evaluation research and our RRL played a major role in this. I developed skills in partnership working, with fellow academics and with practitioners, and these have proved invaluable in my subsequent career.

The Regional Science Association

It is a common observation that in a professional career taking one opportunity often leads to another opportunity, mostly in an unplanned way. This certainly applies to my many and varied roles within the Regional Science Association. They have been

a dominant feature of my whole career. I became secretary of the British Section in the 1970s at a time when regional science conferences in Europe were still largely organized from the RSA's headquarters in Philadelphia by RSA founder Walter Isard. I was part of the movement that wanted European regional scientists to organize their own conferences and, as a founder member of the European 'Core Group' (later to become the EOC), I was lead organizer of the first truly European Congress, held in London in 1979. I never imagined that, in the next thirty years, I would perform the task twice more, for European Congresses in Cambridge (1989) and, with much personal satisfaction, in Liverpool in 2008. Or indeed that I would be invited by my British and Irish Section colleagues to join the Local Organizing Committee for this year's European Congress in Cork.

Editing is another almost omni-present activity in my career. I was an early editor of *Papers in Regional Science*, and took on the editorship of two book series on behalf of the British and Irish Section: *London Papers in Regional Science*, followed by *European Research in Regional Science*. Currently I am working with David Plane (University of Arizona) on the first of a new series of books that focus on *Great Minds in Regional Science*. I often recall advice offered to me many years ago by Walter Isard himself: editing papers is an excellent way of keeping abreast with some of the best regional science research and maintaining a broad overview of the field. This has certainly been my own experience.

Over the years, my involvement in the RSAI has provided me with access to an extensive, world-wide community of fellow researchers and practitioners of regional science, and this has turned out to be a priceless asset. Not surprisingly the highlight for me was to be elected to serve as RSAI President: a lot of hard work yes, but also a great honour to be in a position to shape the future of our Association.

Twenty years on from the presidency, my RSAI involvement continues, now as the Association's Archivist. The Archives are held at Cornell University in the US and provide a rich research resource on the institutional history of the RSAI. During my term as Archivist, I want to encourage more research on different aspects of the history of regional science: on influential regional scientists and on particular regional science concepts and techniques. In my own research I am interested in the history of planning methodology and in the influence that social science, including regional science, has had upon plan-making methods.

Other Activities

It would be wrong to leave this account without saying something about my other academic activities, carried out alongside a career in regional science. When, in 1989, I was appointed to the Lever Chair in Town and Regional Planning at Liverpool, I took a conscious decision to play a fuller role in planning practice, as all of the previous holders of this distinguished chair had done. In my case the obvious thing to do was to develop a portfolio of activities in my home region, North West England. The perfect opportunity came in 1991 with an invitation to me and my

department to prepare a strategic plan for the Mersey Estuary, as part of the 25-year Mersey Basin Campaign. The Campaign had been initiated by the prominent UK politician, Michael Heseltine, who argued very persuasively that the economic revival of the North West would never take place unless drastic action was taken to clean up the Mersey and its catchments. The Campaign was a highly successful example of partnership working. I subsequently served as chair, leading the Campaign, and in 2010, as the fourth and final chair, I recommended that the Campaign be brought to a close after 25 years. By this time, it had achieved its original aims and the river could no longer be regarded as the 'dirty man of Europe'. My involvement with the Mersey continues to this day in my role as Chair of the Mersey Rivers Trust, a new partnership that focuses on environmental improvements across the Mersey catchment.

This, and other activities outside my university, have helped me to develop a concept of what I like to refer to as the 'useful' academic who makes a point of first gaining a clear understanding of the practical situation in which she is working and who develops a good two-way relationship with other working partners. It is important to avoid giving the impression that 'academic knows best'. The skills needed here include political nous and an ability to come up with diplomatic solutions that partners will support.

Finally, it is worth mentioning my roles in university management. Here, as Dean of a Faculty containing all the social sciences and much more besides, I found it helpful to draw on my experience of inter-disciplinary working as a regional scientist to understand the workings of the nine academic departments for which I was responsible. The same applied to my last major role in university management before retirement, as Director of the North West Doctoral Training Centre, a consortium including three universities – Lancaster, Liverpool and Manchester – set up to deliver PhD research training to nineteen social science disciplines and inter-disciplinary fields. What might otherwise have been a daunting task was made much more straightforward because, as a regional scientist, I was used to working with fellow academics from a wide range of disciplines.

6. Forthcoming RSAI conferences and workshops

15th PRSCO

**SUMMER PERU
INSTITUTE 2018**

15th PRSCO Summer Institute, 4-6 July 2018, Lima (Peru)

www.summerinstitute2018.org



58th ERSA Congress, 28- 31 August 2018, Cork (Ireland)

<http://ersa.org/events/58th-ersa-congress/>



2nd LARCSA Congress and 10th SOCHER Congress, 17-18 October 2018, San Pedro de Atacama (Chile)

<http://socher.cl/socher/SOCHERLARSA2018/>



65th NARSC Conference, 7-10 November 2018, San Antonio, TX

<http://www.narsc.org/newsite/conference/>

7. Call for future topics

Newsletter Editors are always striving to find interesting topics for our Association members. We would love to hear your feedback on this point, so if you feel any relevant issue with spatial implications has never been discussed in our Newsletter, please do let us know by writing to andrea.caragliu@polimi.it and G.P.Clarke@leeds.ac.uk. Thank you!

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RSAI MEMBERSHIP INFORMATION

All RSAI members have online access to the Papers in Regional Science (PiRS) and to the Regional Science Policy and Practice (RSP): Journals of the Regional Science Association International. Members will need to log in to access full text articles Online.

RSAI NEWSLETTER, the newsletter of the Association, appears two times a year and contains information about upcoming conferences and meetings, recent publications and a periodic guide to graduate programs in regional science. Please send all electronic submissions of material for the RSAI Newsletter directly to andrea.caragliu@polimi.it and/or G.P.Clarke@leeds.ac.uk.

In addition to the RSAI publications, members are offered an opportunity to purchase other regional science journals at reduced rates and participate in the national and international conferences at reduced rates.

For details on how to become a member, contact the Executive Director at rsai@apdr.pt or visit www.regionalscience.org

Contents

1. Introduction	2
1.1. Welcome from the RSAI President	2
1.2. Welcome to the 12th World Congress of the Regional Science Association International, Goa, May 29-June 1, 2018	2
1.3. Welcome to the 58th European Regional Science Association Congress, Cork, August 28-31, 2018	3
1.4. Welcome from the Editors	4
2. News from the RSAI Council	4
2.1. Action for RSPP: Meeting in Convento da Arrábida, February 2018, 16-18	4
2.2. Geographic breakdown of RSAI Membership	5
3. Spatial implications of climate change	6
3.1. The Regional Effects of CO ₂ -Emissions Reduction in China	6
3.2. Measuring the Costs of Climate Change with Residential Sorting Models.....	7
3.3. Getting it done: key ingredients for success of the Paris climate agreement.....	8
4. Centres of Excellence in Regional Science: Cornell University	10
5. Meet the Fellows: Peter Batey	12
6. Forthcoming RSAI conferences and workshops	14
7. Call for future topics	14

