



# Regionalized nAMEA-type matrix

## PRESENTATION



*the GROW-RAMEA Regions*

**Emilia-Romagna –IT**  
**Noord Brabant –NL**  
**Malopolska-PL**  
**South East England-UK**

*the RAMEA Partners*

**ARPA-ER**  
Regional Environmental Agency  
**TELOS**  
the Brabant Centre for Sustainable Development  
**MEERI**  
Polish Academy of Science  
**CE**  
Cambridge Econometrics  
**SCPnet EA**  
Sustainable Consumption & Production network-  
Environment Agency  
**SEEDA**  
South East England Development Agency  
**SEERA**  
South East England Regional Assembly

*web sites*

[www.regione.emilia-romagna.it](http://www.regione.emilia-romagna.it)  
[www.brabant.nl](http://www.brabant.nl)  
[www.malopolskie.pl](http://www.malopolskie.pl)  
[www.seeda.co.uk](http://www.seeda.co.uk)

*web sites*

[www.arpa.emr.it](http://www.arpa.emr.it)  
[www.telos.nl](http://www.telos.nl)  
[www.min-pan.krakow.pl/pbs](http://www.min-pan.krakow.pl/pbs)  
[www.camecon.com](http://www.camecon.com)  
[www.wflearning.org.uk/scpnet](http://www.wflearning.org.uk/scpnet)  
[www.seeda.co.uk](http://www.seeda.co.uk)  
[www.southeast-ra.gov.uk](http://www.southeast-ra.gov.uk)

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## RAMEA Project's presentation

*RAMEA project &  
GROW program*

RAMEA is one of the 16 Projects financed by the INTERREG III C Program 2005-2007 under GROW, the Regional Framework Operation (RFO) whose main topic is to help Regions in adopting strategies coherent with the Lisbon & Goteborg Agendas goals. Engaging citizens and integrating environmental systems is key to achieving balanced sustainable regional growth; this encapsulates the aim of the GROW partners who all come from high growth regions but share the ambition of "growth, but not at any cost".

The Regions involved are located at the four corners of the European Union: the nord Europe are represented by the South East England with his Development Agency (SEEDA) - the RFO Lead Partner and the Hollandaise Province of Brabant; the East Europe are represented by Maloposka Region in Poland, while the West and South involve the Spanish Andalusia and the Italian Emilia-Romagna.

The GROW projects activities all together aim to "green" economic growth (GREEN GROWTH); increase innovation and competition (BUSINESS GROWTH) while maximising the social potential of society (INCLUSIVE GROWTH). In so doing the GROW partners aim to integrate this "3 pillar (Planet, People, Profit)"sustainable development framework into their regional policies and strategies.

The GROW partnership Regions have high performing economies but also a common vision for adopting measures in order to limit as far as possible the undesirable effects connected with high production and consumer society: the increasing pollution of all environmental media and the excessive use of natural resources. At this stage a question arises. What is the most effective way to limit these effects? At first some suitable knowledge tool are needed to help in setting up "sustainable" targets.

Toward this specific topic the GREEN GROWTH as well as the other two strands has identified sub-themes and technical specifications used for helping in setting up the project proposal in 2 call for proposal rounds.

The relevant sub-theme in our case is the "Resource Management" that includes amongst others the following project outlines:

The Economy-wide tools that allows to assess the impacts of economic sectors on the environment and the material flows (environmental accounting)

On this specific sub-theme was then submitted on the second round, positively assessed and financed the RAMEA project that involves 4 of the 5 GROW Regions: the South East England (UK) with 4 partner Organisations (SEE Development Agency, the SEE Regional Assembly, the Environmental Agency and Cambridge Econometrics), the Noord Brabant (NL) with Telos ( the Regional Sustainable Development Institute), the Malopolska (PL) with MEERI (the Polish Academy of Sciences Mineral and Energy Economy-Division of Statagic Research ) and the Emilia-Romagna Region (IT) with ARPA (the Regional Environmental Agency) that is the project lead partner. The project timeline is from May 2006 until October 2007.

As argued also from technical specifications the Environmental Accounting tools are identified as the reference framework for RAMEA project.

In fact the main project output foreseen is the prototype at regional level of one of the most meaningful and powerful tools that help to bridging the Economy and Environment: the National Accounting Matrix with Environmental Account (NAM-EA). This is a table recording monetary and physical flows, developed since 1993 by CBS (Dutch Statistical Institute) and now currently updated in many EU Member States, at least at national level.

Actually the extended project's title Regionalized nAMEA-type matrix maybe deserves a better explanation.

The NAM is the "matrix version" of the national economic aggregates based on the European System of National Accounts (ESA 95), the standard code used at european level for the value added and other relevant indexes (i.e.Gross Domestic Products, Gross National Income etc.) comparable at global level because it's fully consistent with the revised worldwide guidelines on national accounting, the System of National Accounts (SNA 93) used for code of measuring and compare the national macro-economy performances. In so far the national accounts is a central framework for the presentation and measurement of the economic stocks and flows within the Economy, that can be represented also in a table or matrix version.

For example the production processes can be described by the Supply and Use tables that are two matrices by industry and product describing with great detail the production

*The  
Environmental  
Accounting  
framework*

*The Environmental  
module*

processes (supply table) and the transactions in products (use table). A symmetric input-output table is a product-by-product or industry-by-industry matrix. It rearranges both supply and use in a single table with identical classification of products (or industries respectively) applied for both rows and columns.

The matrix way to represent national accounts is recently even more stressed when the national accounting system was revised again on 2005 in order to reach a complete coherence between all the economic aggregates and the Supply and Use table via a fully integrated calculation approach.

Whatever the version of ESA-data were available, the National Accounting Matrix represents the bulk information of an Economy more suitable to be used for economic analysis and for bridging the economy with the environment.

Nevertheless in order to take into account also the undesirable by-products of the Economy, namely the associated emissions and waste, these have to be recorded by physical units together with the monetary one used in the traditional economic measures. In that case the Environmental Accounts (EA) have to be adjusted to NAM defining an hybrid matrix that is commonly identified as a NAMEA-type matrix.

This is one of the additional accounts, that has an international standard in the System of integrated Environmental and Economic Accounting (SEEA) Handbook, updated to 2003, at present the world-wide recognized conceptual reference on EA. Actually the developing process starts from the fundamental concepts of one of the SNA Chapter where possible environment and social "satellite accounts" adjusted to the main economic ones were established. Fulfilling the Rio declaration the United Nation Statistical Office with the United Nation Division for Sustainable Development and other International Institutes (OECD, World Bank, EUROSTAT) have been working on this line since 1993 and after a continuous revising process via internet consultation also, SEEA should be elevated by 2010 to an international statistical standard, firmly aligned with the SNA.

Until now many pilot applications in a growing number of EU Member States, had regularly up-dated environmental statistics in EA framework. Moreover under EUROSTAT coordination some methodological reference guides have been defined. The most experienced one across the EU Countries is the "NAMEA for air emissions - compilation guide". And this one has been chosen as a common guide line for the RAMEA project output following the arising awareness on the global warming issues.

Nevertheless the NAMEA-Air pilots are mainly referred to the national level, so that the project partnership work will be mainly directed to set up the better way to "regionalise" this method.

This "regionalization process" leaves some degrees of freedom to the project development from one partner Region to the other, depending on the characteristic of the national economic module and the environmental data available. This definition excluded only a pure "bottom-up" construction method of the regional modules.

It means that no additional data collection has been planned and only the officially available data are used in order to maintain as far as possible a mutual interregional comparison opportunity both at international and interregional level.

*The regionalization  
process*

The common standard on which the data were collected should guarantee a mutual coherence amongst the 4 European Regions for a possible economic and environmental performance analysis at macro-level. Then by means of their own "tailor made" regionalization processes, the four RAMEAs–Air emissions prototypes were finally completed. In so far the slight unavoidable differences in building up methodology amongst partner Regions haven't prevented Regions from benchmarking their results.

The benefit at EU level is self-evident: the improved statistical framework could be also the most effective analytical base to derive the structural indicators, used at EU level to measure the state of the art of European development strategy implementation, especially after the Spring Council in March 2005 when the Lisbon & Gothenberg Strategy has been revised and the Member States are asked to prepare National Plans after wide-ranging consultations with their Parliaments, social partners and local and regional governments.

*The needs at  
EU level*

Moreover during this period of decreasing financial resources the Commission will be more careful to guarantee the coherence between the various institutional levels to increase the resources efficiency and this needs multilevel assessments. The measures must be, as far as possible, done by "quality certified" data and by methodologies to be shared between all UE Member States, including the new Members by the 25-EU enlargement. The best way to succeed in this challenge is to set up a coherent statistical framework like that used for

measuring the economic aggregates (i.e. the Gross Domestic Product – GDP) and socio-economic indicators (i.e. employment rate) adjusting the environmental related impacts. This is the NAMEA structure.

Every Regional Partner has baseline experiences carried out before the beginning of the project, each of which with a specific excellence in complementary topics. Starting from the strong know how of Nederland Region whose Dutch Statistical Institute (CBS) developed the first NAMEA since 1993; to the UK partner that is currently using an econometric model that allows to identify alternative scenarios for a conscious help to decision making processes; to the Polish partner that gives particular attention to the integration with the life cycle analysis of products as an additional criteria for the building-up methodology and the result interpretations; to the Italian one that has just some experienced Regional NAMEA pilots at regional level in two other Italian Regions to be capitalized in the new prototyping exercise for the Emilia-Romagna.

The RAMEAs potential applications are quite promising. They are suggested from one side by the experiences carrying on by the partner Region that has forecasting econometric model (the UK Region) tightly related with RAMEA tool because of the similar set of data involved.

The NAMEA-type framework both at national and regional level allows to getting insight an economy-wide context that the policy/decision maker should try to modify. To highlight the specific sectors that have a key role in generating desirable or undesirable effects (in terms of economic or environmental performances) is the main model utility. This could be easily done by comparing the economic and environmental efficiency profiles of the productive sectors in a cross-section analysis at different geographical levels in order to detect what is due to the common national structure and viceversa what is a regional-specific one.

In addition if more then one year description is available, it's possible to identify trends in time-series either for monitoring purpose or for determining factors of changes and their respective contribution (i.e. by decomposition analysis)

Environmental Accounts are mainly production oriented in that the environmental pressures are allocated to industries or to private consumption of energy for heating and transportation only. Nevertheless if the accounts are linked to the Use, Supply or symmetric Input-Output tables of the economic accounts, the environmental pressures of the demand side is also calculated, in terms of embedded emissions in the final consumes. These emissions are traced through the production chain - the successive intermediate consumption of industries - thanks to the input-output account data and the Leontief approach. In fact the household consumption is also indirectly responsible for other air emissions that are attributed to the producers of the products they consume.

Then the role of the consumers should be emphasized by promoting changing behaviour and by the introduction of environmental labelling schemes and a general interest in a more environmentally friendly life style.

This could be part of an implementing strategy design in term of financial tools (taxes/incentives) or other motivational strategies in order to succeed in reaching some specific targets. As a complement to that a latere it should be analysed the sensitiveness of an economy to that specific award/penalties mechanism.

In so far this model vocation is to inform policy/decision makers in defining alternative scenarios after having identified the main responsible economic sectors in producing an undesirable pollution substances e.g. CO<sub>2</sub> emissions or other Green House Effect gases; then to identify different goals for different actions enabling to reduce emissions, while disclosing e.g. the trade-off between the decrease in environmental pressures and possible impacts on income, employment etc.

The new programming period 2007/2013 of EU structural Funds should be a promising field for RAMEA prototype application in providing indications for the fine-tuning of the parameters of intervention or decision for the resources allocation by the Regional Managing Authority of Funds.

An example in Italy (similarly in the other involved countries): it is worthwhile that the Public Investment Evaluation Unit of the National Department of Development Policies explicitly suggested the widespread use of Environmental Accounting tools including NAMEA at regional level to better allocate funds by means of a transparent and well informed decision process. It will be encouraged also by the bill on Central and Local Government Environmental Accounting currently under discussion in Parliament and in Emilia-Romagna Legislative Assembly.

Summing up the potential of RAMEAs in supporting policies is twofold:

*Decision Support  
System at Regional  
and National level*

*The 2007/2013  
Structural Funds  
allocation*

*The follow-up opportunities*

from one side at macro level e.g. for Strategic Environmental Assessment of the Regional Operative Programs of the Competitiveness or Cohesion Funds and any other Regional Development Strategy ;

from the other side at micro-level where every individual projects concurring in implementing the above strategy must be on line with the desirable target set-up at macro-level

For example in the case of low-carbon targets for the Structural Fund implementation process, RAMEA should help in defining the expected eco-efficiency of an economic sector and the balance with the others in terms of total CO2 emissions and eventually linked Emission Trading calculations.

At the end of the project the reactions on the methodological results described above are very encouraging witnessed by the explicit recognition in a variety of dissemination events as a good practice to be wider diffuse in Europe.

In so far there are enough reasons for stating that RAMEA project results would deserve to be capitalised in a more robust way inside the promoting Regions at first in order to be successfully widespread into the other ones.

The INTERREG IV C Program represents an opportunity on this line because of the capitalisation issue inspiring the whole program.

Nevertheless the just finalized RAMEA prototypes represent only one of the Environmental Accounting tools useful for orienting policy/decision makers in moving toward the Lisbon & Gotenberg targets in a more environment-friendly way. At a further step it should be explored the potential for an integration of this Regional NAMEA-type matrix with the intake of natural resources and energy, with new environmental themes (water, waste) and with social issues too.

Meanwhile other complementary tools should be defined on the side of public responses quantification in terms of financial and non financial resources used by all institutional actors coping with natural resources degradation and depletion.

This should be done in the view of setting up of all the valuable at regional (and local) level tools promoted by United Nation and EUROSTAT and systematized in SEEA 2003

The building activities for the 3 Sustainable Development pillars integrated knowledge is now started but it must be a continuous process with a tight link with the decision/policy makers in order to avoid an inevitable self-reference with no tangible results.

## Main References

Cervigni R., Costantino C., Falcitelli F., Femia A., Pennisi A., Tudini A. 2005. *“Ambiente e politiche di sviluppo: le potenzialità della contabilità ambientale per decidere meglio”*. [www.dps.mef.gov.it/documentazione/uval/materiali\\_uval/Muval5\\_Contabilita\\_Ambientale.pdf](http://www.dps.mef.gov.it/documentazione/uval/materiali_uval/Muval5_Contabilita_Ambientale.pdf)

EEA 2007. *“Environmental pressures from European consumption and production - Insights from environmental accounts”*. [http://reports.eea.europa.eu/brochure\\_2007\\_1/en](http://reports.eea.europa.eu/brochure_2007_1/en)

Eurostat 2001. *“NAMEA for air emissions – Result of pilot studies”*. Office for Official Publication of the European Communities, Luxembourg.

Eurostat 2004. *“NAMEA for Air Emissions - Compilation Guide”*. [http://forum.europa.eu.int/Public/irc/dsis/envirmeet/library?l=/11-130505\\_environmental/namea\\_air/namea\\_training&vm=detailed&sb=Title](http://forum.europa.eu.int/Public/irc/dsis/envirmeet/library?l=/11-130505_environmental/namea_air/namea_training&vm=detailed&sb=Title)

ISTAT 2007, *“La NAMEA: conti economici nazionali integrati con conti ambientali”* disponibile [www.istat.it/dati/dataset/20070625\\_00/](http://www.istat.it/dati/dataset/20070625_00/)

United Nations et al. 2003. *“Integrated Environmental and Economic Accounting (SEEA 2003)”*. <http://unstats.un.org/unsd/envAccounting/seea.htm>



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[www.ramea.eu](http://www.ramea.eu)

