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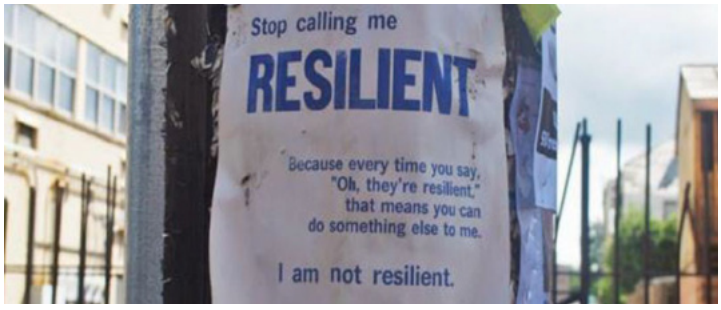
To be resistant or to be resilient to disasters... is that the real question?

Resilience is undoubtedly the word of the moment, a fashionable concept from which neither the civil protection sector nor the scientific community were able to remain detached. Yet, resilience to disasters is hardly new to Homo sapiens; the ability to bounce and recover from a state of crisis or negative event has always been a salient feature of humankind. Then, why the expression "resilient communities in disasters" nowadays educes thoughts of modernity and future? Perhaps because in recent times the human society has set aside its ability to adapt to nature and has followed the ideological whim of resistance to extreme natural events.

From the agricultural revolution onwards, humans have tried to free themselves from the control of nature by modeling the territory for his own benefit. This, on the one hand, has enabled the social development we enjoy today, yet, on the other, the interaction with natural processes we do not fully understand has created problems of exposure and vulnerability. The consequences went beyond the creation of risk conditions (hazard by vulnerability), and caused profound changes in environmental cycles hindering essential ecological services. Climate change is a clear

example of these consequences.

Examples of resistant strategies replacing resilient approaches are very common in flood hazard management. Protecting ourselves from floodwaters by restraining the river into its normal waterway is a resistant solution that opposes the normal riverine functioning; floodplains are built and maintained by the river to temporarily place the water in excess brought by rainstorms. Early farmers cultivated these very productive soils and were well aware that the river may "lend its floodplain," but eventually will claim it again. Those resilient farmers avoided widespread constructions of permanent structures on these terrains and valued the natural fertilization service performed by the seasonal floods.



The increasing ability to build ever-taller levees has given us the illusion that we can permanently take away the floodplain from the river and change its land-use. At the same time, natural fertilization was replaced by industrial chemistry. The consequences of these choices are in everyone's eyes: resisting natural processes has produced more harm than good in the long term. The challenge is about finding a sustainable balance between natural and social processes. The possible answer can be found once again in our history. When humans tried to understand and adapt to nature, they succeeded in settling even in the most extreme environments, when they tried to control nature, the consequences were disastrous. The real limit is not nature, but our ability to imagine ourselves as part of nature and not superior to it.

Fausto Marincioni
Professor of Disaster Risk Reduction
Università Politecnica delle Marche

Life PRIMES Starting Conference at RemTech Expo in Ferrara

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"Floods and climate change: towards a participatory hazard prevention model." This was the title chosen for the Life PRIMES project starting conference that took place in Ferrara on Wednesday afternoon, 20th October, on the occasion of the RemTech/Esonda Expo 2017. The conference gathered several institutions and specialists in the field, giving them the opportunity to discuss and analyse the topics of this project in detail.
The starting conference has been organized by theDepartment for Territorial Safety and Civil Protection of Emilia-Romagna.
The programme included many interventions, moderated by Giuseppe Bortone, Chief Executive of Arpae Emilia-Romagna, who opened the meeting by greeting Paola Gazzolo - Regional Assessor for the Protection of the land and coast, the Civil Protection and the Environmental and Mountain Policies - and Maurizio Mainetti - Chief Executive of the Department for Territorial Safety and Civil Protection of Emilia-Romagna.
Then it was Daniele Garuti's turn - Mayor of Poggio Renatico - who, in the name of all the Mayors involved in the Life PRIMES project, expressed his gratitude for the opportunity to be part of a participatory programme which is crucially important for the Municipal Authorities.
Afterwards, the participants got to the heart of the meeting and organized three work sessions: national and European regulations and policies, the Life PRIMES project, and climate change and networking.
The first part saw the alternate participation of the following experts: Andrea Tilche, Chief Executive of the Department for Research and Development of the European Commission that supervises the Team for "Climate action and Earth Observation", underlined the main results obtained by EU research and innovation programmes; Sergio Castellari, of the European Environment Agency, talked about the transformation of cities in a constantly changing climate; Domenico Gaudioso, from ISPRA, gave a report on adaptation to climate change in Italy; Carlo Cacciamani, Chief of the National Functional Centre for the Prevention of Hydro-Meteorological Risk of the Civil Protection, explained the National Alert System; Stefano Bataloni, from ISPRA, reported his experience at the National/Regional Round Table of the Ministry of the Environment and Protection of Land and Sea of Italy on coastal erosion.
An international guest closed the session: Ida Andersson, from the Municipality of Arvika (Sweden), spoke about the strategies for flood risk prevention and reduction carried out in her Swedish town.
In the afternoon, the meeting continued with a detailed presentation of the Life PRIMES project and its progress status. The speakers who intervened in this second part were: Clarissa Dondi and Valeria Pancioli from the Department for Territorial Safety and Civil Protection of Emilia-Romagna; Alessandra De Savino who, on behalf of Eurocube srlcr, illustrated the methodological guidelines for the homogenization of the alert systems on which the PRIMES project is based; Marco Cardinaletti, from Eurocube srlcr, and Eva Merloni, from AreaEuropa scarl, presented a tool called CAAP – Civic Adapt-Action Plan; Fausto Marincioni, from the Department of Life and Environmental Sciences of the Marche Polytechnic University, described the evaluation models for territorial resilience.
This dense conference programme ended with a networking moment, as well as a series of short presentations on the LIFE projects dedicated to climate change: LIFE RainBO, CRISMAS, LIFESEC ADAPT, RESCUUE, PROTERINA 3, LIFE DERRIS, CAPFLO.

After outlining the art background of the project, the second working phase of the Life PRIMES project started with the workshops - the first ones planned in Emilia-Romagna - and the participatory programme that will have to guide the citizens who live in areas at higher risk of flooding towards a greater level of adaptation and effective response to climate change.

EMERGENCY MANAGEMENT: A LOOK AT SWEDEN

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An interesting survey on the emergency management system in Sweden was presented by **Ida Andersson**, Emergency Coordinator of the Municipality of Arvika, during her interventions about **"Flood Risk Prevention and Mitigation: Case study from Municipality of Arvika"**.
Andersson explained that the planning of emergency situations in Sweden is essentially based on three main principles: **responsibility** (which also includes geographical responsibility), **closeness and compliance**.
She went on explaining that responsibility means that anybody who is responsible for a certain sector or geographical area in time of peace **must be responsible for it even in the middle of a crisis** and therefore has to start a cross-collaboration with the other sectors involved in the emergency.
As far as the principle of closeness, the emergency has to be **handled by the nearest authority to the affected area**. Finally, compliance means that the organization in charge of handling the emergency must be **as much as possible similar to the day-to-day management system**, and it should maintain the same roles and procedures, as much as possible.
As far as planning and preparation to the emergency are concerned, the 290 Swedish Municipalities have **a wide degree of autonomy** and play an important role. Their task is to plan, act and decide on the use of the territory, as well as on building permissions, environment, Civil Protection, crisis management and social welfare. Funds for these risk planning and reduction activities are provided by the central government. When an emergency occurs, the highest civil authority within the affected Municipality is the Municipal Executive Committee which is in charge of handling the whole crisis situation on a local basis. While carrying out this role, the Municipalities are supported and assisted by the County Administrative Council.
Finally, Ida Andersson presented the flood case study that affected Arvika, her municipality, in 2000, when constant rainfall from September to December was three times the average level of normal rainfall, **causing the water levels to increase up to 3.14 meters above average**, and to flood the town, resulting in 30 million Euros damages and 2 years to get back to normality. That event was followed by targeted studies and subsequent structural reduction measures that, nevertheless, have been seriously hampered by bureaucratic timing and procedures. After all, the world is a village.

ADAPTATION IN EUROPE: TRANSFORMING CITIES IN A CHANGING CLIMATE

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Via video conferencing from Copenhagen, Climatologist **Sergio Castellari**, of theEuropean Environment Agency (EEA) in Copenhagen (Denmark), spoke about ***"Urban adaptation to climate change in Europe 2016 — Transforming cities in a changing climate"***. The team Castellari is currently collaborating with in Denmark works on adaptation to climate change, and risk and disaster reduction.
Castellari presented the main topics contained in the EEA report about urban adaptation to climate change, published in 2016. The choice to draw attention to metropolitan areas comes from the fact that **about 75% of the population in Europe lives in cities**. Therefore, as Castellari explained, the cities that will prove to be well adapted and resilient to climate change will be the starting point to create a Europe resilient to climate change, too.
Many reports have been written on climate change by the EASA in the last years: the latest in 2016 focuses on urban adaptation and fixes four main key points about the programme that will involve cities:
1) Europe has already begun the process of urban adaptation, but mainly **it is still in the planning phase**, and only in some cases it has already passed to its real implementation
2) there is a **knowledge gap**: some cities "know" how to do things properly, while some others have not implemented adaptation strategies, yet
3) cities face climate change **as they occur**, or on the other hand they adopt adaptation strategies
4) it is necessary to face adaptation with a **long-term and systematic approach**, in order to anticipate future climate impacts, by taking into account global trends.

Afterwards, Castellari explained the two conventional approaches to adaptation to climate change: the first one is **dealing immediately with disaster damages** and subsequently recovering with emergency solutions; the other one is **adapting incrementally**, that means improving already existing adaptation measures and studying any possible solutions, in order to make them more effective and able to avoid damages, even in case of future increased levels of risk. Both approaches can offer effective, short/middle-term solutions, and aim at preserving or restoring the current level of urban services.
However, at this point a question arises: will all the measures implemented today in order to face climate change also be effective to face the potential consequences that they will bring in the future? A possible answer could be **transformational adaptation**, which aims at finding different solutions in order to effectively face the challenges they present, rather than improving already existing ones. Among them, Castellari mentioned

the widespread use of the so-called *nature based solutions (or green infrastructures)*. The most drastic transformational adaptation can be **relocation** (that is, the displacement of an entire settlement from a non-safe location to a safer one), a measure that has been rarely implemented up to today.

PROGRAMMES ABOUT INNOVATION AND RESULTS OF THE RESEARCH IN EUROPE

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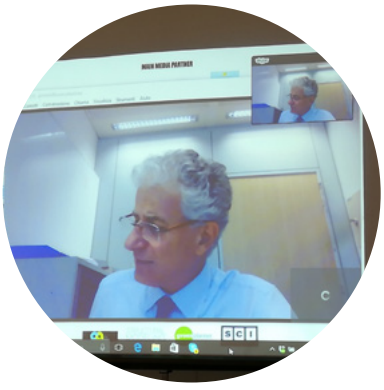

In his intervention "Outcomes from EU research and innovation programmes" Andrea Tilche, Member of the European Commission, DG Research and Innovation, and head **of the "Climate action and Earth observation" Unit** for nearly 7 years, **presented via video conferencing the projects he is currently working at:**

1. **ENHANCE** about risk-sharing in case of natural disasters http://enhanceproject.eu/
2. **HELIX** https://www.helixclimate.eu/ and IMPRESSIONS http://impressions-project.eu/show/project_2731/ about the impacts of 4-6°C scenarios
3. **IMPREX** http://www.imprex.eu/ and BINGO http://www.projectbingo.eu/ about prevention on a European scale as far as the course of the water cycle and extreme events.
4. **PUCS** about urban climate services.

Afterwards, Tilche talked about **insurances against natural disasters** and stated that neither the State, nor the private citizens, even if they have previously taken out a good insurance policy, can entirely meet the expenses for the damages caused by a natural disaster. We need to introduce a reduction of the insurance premium, by evaluating the extent of the damages, in case that measures for risk prevention, resilience and reduction have been implemented.

Articles by Patrizia Calzolari - Cervelli In Azione

EVALUATING TERRITORIAL DISASTER RESILIENCE

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One of the contributions from UNIVPM to the PRIMES Project is to develop an innovative formula for calculating the Disaster Risk Reduction Index (DRRi), applied in this case to the flood risk.

The formula measures the relationship between the Territorial Criticality Index (ICT), which describes possible impacts and consequences of a flood in the territory considered, and the Adaptive Capacity Index (ICA), which describes the set of resources of the territorial system exposed to such hazard, both in terms of resistance and resilience. When the ICT component prevails, it means that the flood event considered has characteristics that cannot be addressed by the specific community. If ICA prevails, it means that community resources are sufficient to deal with the consequences of the flood. For the PRIMES project, the DRRi was calculated for 3 different event scenarios with increasing complexity: emergency, disaster, catastrophe.

At the Starting Conference of Ferrara, we presented the first results of this complex analysis. Overall it appears that, due to the limited adaptive capacity, all the municipalities studied are vulnerable to a scenario of flood "emergency". However, the same municipalities are less exposed to scenarios of flood disaster or catastrophe.

The proposed formula offers the great advantage of highlighting the priority actions to be implemented in the various municipalities, in order to decrease the total value of the DRRi. These actions are deducible from the values obtained in the individual components of the formula.

Eleonora Gioia and Fulvio Toseroni
Postdoctoral Research Fellows at the Disaster Lab
Università Politecnica delle Marche

GUIDELINES FOR HOMOGENIZATION OF INTERREGIONAL ALERT SYSTEMS

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Risk prevention also means providing effective and timely early warning systems, particularly in a context of increasingly frequent rainfall that develops rapidly, causing flash floods. This is why one of the aims of the Life PRIMES project is to homogenize the alert procedures among the three Project Partner Regions (Abruzzo, Marche and Emilia-Romagna) in order to reinforce coordination between the components of the Civil protection system for flood risk management.
In the context of the Starting Conference, the methodological process was presented, which brought to the drafting of a Manual for the homogenization of the alert systems, the result of the work carried out in three parallel boards and in plenary by the Advisory Board composed of experts from the three Regions.
The full version of the Manual collects and harmonizes the contents of the three protocols developed through co-operative work, which summarizes the results of the comparison and the possible homogenization criteria for the following topics:
1) data collection, hazard analysis and risk management
2) alert procedures
3) information and communication procedures.

In the summary of the Manual (short version), elaborated in the form of a guideline, the methodological processes will be described and the results achieved in the homogenization of the regional warning systems for the assessment and communication of flood risk and sea storms. To strengthen collaboration with other institutions and to validate the contents of the Manual, this short version will be submitted to the revision of the Civil Protection Department and other Regions identified in project networking.

A first important achievement in Life PRIMES is the development of an inter-regional alerts graphic display that will soon be available on the project website.
The comparison between the three Regions has led to the emergence not only of similarities but also of differences, for example in the spreading of hydrological data in real time and in the management of the risk of storm surges, but above all has allowed the exchange of good practices, always useful for improving systems and enhancing the tools available to partners.

Alessandra De Savino - Eurocube

THE NETWORKING PROJECTS AT THE STARTING CONFERENCE

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With the Life Primes Project's Starting Conference, held in Ferrara on 20 September 2017 at Remtech-Esonda, the networking action provided for by the project came alive, with the aim of sharing experiences, best-practices, tools, results and more effective orientation of ongoing activities.

Specially invited to the event, which provided for a specific session dedicated to networking, the Life RainBO project, CRISMAS, LifeSec Adapt, resilient cities facing climate change, Proterina 3, Life Derris and Capflo (Local Resilience Capacity Building for flood mitigation).

The projects selected in the Italian panorama of ongoing experiences have several common themes ranging from the analysis of extreme phenomena to planning actions and adaptation to climate change. In particular:

- have the goal of increasing resilience and empowerment of institutions and communities;
- they focus on centers and urban areas and consequently increasingly involve the local level;
- build and develop new tools (platforms, software, web interfaces) useful for monitoring, early warning and planning adaptation to climate change;
- they have a multifaceted approach;
- work on emergency planning and adaptation plans.

A complex and ever-combining thread combines the projects that PRIMES intends to engage through meeting, conferences and offline and online discussion spaces. To this end, a new web platform is developing and will be an innovative and useful tool also to facilitate the exchange of information and dissemination and sharing of results.

Patrizia Ercoli - Emilia-Romagna

The Civic Adaptation Plan - CAAP

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The Life PRIMES project, aimed at increasing the resilience and adaptation capacity of communities with respect to flood hazards, will reach this goal with the direct involvement of citizens by acting on two different levels that complement and reinforce each other: the creation of a tool and the start of a participatory process.
The Life PRIMES project is, in fact, ready to present its new instrument: the Civic Adaptation Plan (CAAP). CAAP is a tool for the active participation of citizens in local policy administration and is structured as an online game, captivating and easy to compile for any type of subject.
Through the game, the citizen will have the opportunity to:

- Evaluate his/her own knowledge of flood risk through a quiz that gives back his/her resilience profile
- Increase his/her level of knowledge with five short-friendly tutorials, based on the resilience profile obtained in the previous phase
- Be directly involved in the definition of the adaptation actions that will support the drafting of civil protection plans and can be integrated into city emergency plans.

At the end of the game, the citizen will be able to download his own Civic Adaptation Plan, which will contain all quiz answers and personal adaptation actions and can be shared directly on social networks (Facebook, Twitter, Instagram). The whole CAAP process will make citizens more aware of climate change and the risks of their territories and thus more resilient.

This awareness, in addition to being increased by the CAAP tool, will be strengthened through the development of a participatory process in the three Emilia-Romagna areas selected as project pilots: Lido di Savio (Ra), Poggio Renatico (Fe) and four

Municipalities of Valle del Santerno (Lugo and Sant'Agata sul Santerno - Ra, Imola and Mordano - Bo). These areas are, in fact, exposed to marine inflows (as well as to Savio overflows), to the risk of Reno river flooding and to the potential overflow of Santerno.

In each of the sample areas a Life PRIMES workshop will be organized, during which future clima-

te scenarios for the local area will be presented (Arpae), the results of a survey conducted by the Marche Polytechnic University (other partner of Life PRIMES) on risk perception in pilot areas will be illustrated, but above all, the CAAP will be presented to citizens and stakeholders of those communities. On this occasion, workshop participants will complete their CAAPs, while all the friendly-tutorials will be displayed during the plenary session in order to spread the five information pills produced within the project framework. The set of products realized by Life PRIMES, i.e. the organization of a participatory process and the development of the CAAP tool, will enable a bottom up hydrological and coastal risk management process through the direct involvement of local communities, increasing so their ability to adapt and reducing the vulnerability to climate change.

Eva Merloni - AreaEuropa,
Marco Cardinaletti - Eurocube

EVENTS

6-8 Nov 2017 Bruxelles (Belgium)

13th EWA Brussels Conference: Recent Developments in EU Water Policy

On the eve of the 13th EWA Brussels Conference, the European Water Association (EWA) will award the William Dunbar Medal. Since 1973, the Dunbar Medal has been donated by Messe München International and awarded by the EWA to an individual, who has made a major contribution to the science and/or technology of water or wastewater management.

15 Nov 2017 Bonn (Germany))

EU Research and Innovation Day at COP23

16-17 Nov 2017, Paris (France)

Clean Air Forum

Clean air is essential for healthy living. The European Union is working to ensure that every citizen can breathe without risking their well-being. Progress has been made over the past decades, but more needs to be done still.

23-24 Nov 2017 Edinburgh (Scotland)

6th European Environmental Evaluators Network Forum (EEEN Forum)

The 2017 EEEN Forum focusing on 'Evaluating Innovation in Environmental Protection and Sustainability', will bring together practitioners, academics, policy-makers and other users of environmental evaluation to share views, knowledge and experiences about the use, relevance and future priorities for climate and environment policy evaluation.

05 Feb 2018 Tours (France)

International conference on climate change & water 2018

The aim of this conference is to stimulate exchanges and new developments that enrich the diversity of local responses to the impacts of climate change on water, including biological, technical and societal adaptations. The conference is open to both academics and non-academics.

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