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for Climate Change Adaptation

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Climate Change and Urban Planning
Wuppertal, Germany

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Management Summary

This document is a deliverable (D9.4.2 Dissemination Event 2) of the SUDPLAN project, which is an EU FP7 project under the Information Communication Technology Programme (ICT-2009-6.4 ICT for Environmental Services and Climate Change Adaptation).

Purpose and structure of this Document

The SUDPLAN project plan foresees two dissemination events. The first one had the objective to communicate and receive feedback on the scientific background of the project results. The deliverable D9.4.1 document summarizes the special topic/session (Climate Services and ICT Tools for Environmental Urban Planning) of the ISESS 2011 conference, organized by the SUDPLAN consortium. The session included five SUDPLAN presentations augmented by seven presentations of other projects relevant for the topic. A sixth SUDPLAN presentation was given in another session. The D9.4.1 document summarizes the content of the presentations made at the ISESS conference SUDPLAN session and the experience and feedback gained by the discussions with the present experts.

The present document D9.4.2 reports on the second dissemination event, realised as a workshop titled *Climate Change and Urban Planning* in Wuppertal, October 11-12, 2012. This time the target group was potential end-users of the SUDPLAN tool, i.e. urban planners and their technical support organisations. The event was entirely organized and funded by the project.

The following section describes the form of the Wuppertal workshop, the number of external participants, their professional profiles and how the SUDPLAN results were presented and demonstrated. The invitation call for the SUDPLAN workshop is cited and the staff representing SUDPLAN consortium, is listed. A summary is given of the presentations and demonstrations made during the two days, together with the experiences gained and the conclusions that could be drawn from the feedback.

Intended Audience

This document is public and will be distributed through the SUDPLAN official web page (<http://www.sudplan.eu>).

Summary

The SUDPLAN 2nd dissemination event was successfully accomplished as a workshop entitled *Climate Change and Urban Planning*, taking place in the Stadthalle Wuppertal (October 11) and the Rathaus Wuppertal (October 12), 2012.

More than 50 external persons registered and attended the workshop. They came from Germany, Czech Republic, Nepal, Sweden, Norway, Austria, Estonia, the Netherlands and Latvia. As expected the majority came from Germany, but there was also a prominent Czech five-person delegation (including the ex-minister of environment).

The first half day was introduced by three keynote speakers:

- Prof. Stefan Greiving “Climate change and challenges in urban planning”
- Dr. Colin Jones “Providing reliable estimates of regional climate change for Europe”
- Prof. Steven P. Frysinger “Decision Support Systems”

They gave together a project external perspective on the three corner stones of the SUDPLAN project: the option to take *change* (not only climate) into urban planning, the possibility of having access to reliable *climate projections* and the access to *IT tools* to support the planning process. With this as a background, the SUDPLAN team gave their presentations, with a focus on what pilot end-users could achieve by using the tool.

The second half day was organized in four parallel sessions (Linz Pilot, Wuppertal Pilot, Air Quality and Hydrology) where live demos of the systems were given in dialogue with and actively involving the audience.

The Wuppertal Pilot was presented to three groups consisting of fifteen to twenty people each. Participants gained insight in the Wuppertal planning workflow to reduce inundation after heavy rainfall. Due to the interactive nature of the demonstrations participants were able to dig deeper into specific parts of the Pilot, which they did frequently. Moreover, they showed considerable interest in the possibility of deploying the software for their city and make public the information generated by Commons Services.

The Linz pilot was presented three times, showing the management of the combined sewer system and the risk of overflow of non-treated sewage water into receiving waters. All presentations were done interactively with the participants. Main focus of the issues raised during the presentations concerned the transferability and needs of the application for other European cities.

Aspects of air quality were presented in a combined Stockholm/Prague session. The first air quality presentation assessed what will happen in the Prague area itself, as a consequence of five possible scenarios. The Pilot staff then showed how the SUDPLAN downscaled air quality projections have been transferred to the CENIA Geoportal, so that the results are available for the general citizen as layers above maps, together with other environmental and activity maps. A similar presentation was later made for Stockholm, for which the case study addressed a new road project through the city. The audience discussed the possibility to obtain similar projections for Germany, Norway, Austria and the Netherlands.

The use of SUDPLAN as support to water resource management has been evaluated by regional water authorities in Sweden. Three demonstrations of the hydrology application were given, illustrating how the Scenario Management System (SMS) can be used for hydrological impact studies. The demo showed how an improved projection of surface runoff and river discharge can be obtained by creating a local model of upstream catchment areas and performing a local calibration before executing the climate scenario simulation.

The entire consortium was very pleased with the outcome of this dissemination event. The good attendance with more than 50 external persons, together with the lively discussions that followed after especially the second days live demonstrations, show that the SUDPLAN concept raises interest. The participant list is used for ongoing exploitation activities.

Abbreviations and Acronyms

Acronym	Description
AR	Assessment Report (IPCC:s reports on the scientific status of Climate Change)
CS	Common Services (component of SUDPLAN tool)
DEM	Digital Elevation Model
DoW	SUDPLAN Description of Work
DSS	Decision Support Systems
GIS	Geographic Information System
GUI	Graphical User Interface
ICT	Information and Communication Technologies
IPCC	Intergovernmental Panel on Climate Change
ISESS	International Symposium on Environmental Software Systems
OGC	Open Geospatial Consortium
RCP	Representative Concentration Pathways (emission scenarios used for the AR5, replacing older SRES scenarios used during AR3-AR4).
SOS	Sensor Observation Service (OGC specification of draft)
SMS	Scenario Management System (component of SUDPLAN tool)
SPS	Sensor Planning Service (OGC specification of draft)
SRES	Special Report on Emission Scenarios (emission scenarios defined in AR3)
WFS	Web Feature Service
WMS	Web Map Service

Introduction

SUDPLAN is an EU FP7 project under the Information Communication Technology Programme (ICT-2009-6.4 ICT for Environmental Services and Climate Change Adaptation). SUDPLAN shall provide local information and quality services to effectively support urban planners and decision makers in urban areas all over Europe in the areas of intense rainfall events, drought and flood risks, and severe air pollution episodes, affecting urban infrastructure and population under the influence of a changed climate. The services are offered through a highly interactive, web-based decision support and training tool. There are four pilots demonstrating the use of the SUDPLAN tool: Stockholm (air quality), Wuppertal (stormwater flooding on streets), Linz (intense rainfall and combined sewer overflow) and the Czech Republic (air quality in the Prague region). There is also a Swedish evaluation of the hydrological component which focuses the future water resources (runoff, river discharge, soil moisture, ground water). Through dissemination and exploitation efforts, the SUDPLAN tool is presented and offered to cities in Europe.

As part of dissemination task, two events have been realized. The first event, taking place during year 2 and summarized in the D9.4.1 document, had the objective to communicate and receive feedback on the scientific background of the planned SUDPLAN services. The second event, described in the present document, was realized during October 11-12, 2012, targeting potential end-users in European cities.

SUDPLAN event in Wuppertal 11-12 October, 2012

Form of the event

The outline of the second event was discussed and decided during the SUDPLAN 5th PMC meeting in Linz, February 15-17, 2012. The lunch-to-lunch form was found best, as it allows a clear separation between traditional presentations and the practical laboratory exercises to be used to demonstrate SUDPLAN live applications. Moreover, it also gives good possibilities for social networking during a dinner. Our objective was to attract around 50 externals working with urban infrastructure and/or environment. The event was decided to be free of charge and we also decided to raise common resources to be able to invite 5-10 persons of special importance for future use of the SUDPLAN tool.

The practical parts of workshop preparations – venues, hotels, online registrations etc - were taken care of by the Stefan Sander and Helga Bennink of the Wuppertal pilot. The event was given the title “Climate Change and Urban Planning”. An invitation letter was elaborated (see Annex 1) and sent out through SUDPLAN and SUDPLAN partner’s mailing lists. In the invitation we also encouraged people to bring - or send in in advance – their own input data for testing SUDPLAN downscaling.

We identified, contacted and got acceptance from three keynote speakers, Prof. Stefan Greiving from Germany, Dr. Colin Jones from Sweden and Prof. Steven P. Fryssinger from USA. They agreed to cover the three cornerstones of SUDPLAN development, the urban planning challenges of the future, the information available on future changes in the climate (model projections) and the use of IT tools as support to decisions.

The final agenda can be found as Annex 2. All presentations together with videos that reflect the live demos of the second day have been placed on the SUDPLAN homepage:

<http://www.sudplan.eu/Results/Workshop/SUDPLAN-workshop>

Outcome of the event

The event attracted a total of 55 external persons. The participants came from Germany, Czech Republic, Nepal, Sweden, Norway, Austria, Estonia, the Netherlands and Latvia (Table 1). As expected the majority came from Germany, but there was also a prominent Czech five-person delegation including members of the ministry of environment.

A total of 22 persons from the SUDPLAN team participated in the event.

Summaries of the presentations and the content of the laboratory exercises are given in the following subsections. The two selected historical venues gave excellent conditions for the plenum session of day 1 and the four laboratory stations of day 2..

Table 1: Affiliation and home country of external participants

<i>organization</i>	<i>country</i>
Holding Graz Services Wasserwirtschaft	Austria
TU Graz, Institut fuer Siedlungswasserwirtschaft und Landschaftswasserbau	Austria
Wien Kanal (Stadt Wien)	Austria
City Development Authority Prague	Czech Republic
Czech Hydrometeorological Institute (CHMI)	Czech Republic
EKOSYSTEM, s.r.o.	Czech republic
Ministry of the Environment of the Czech Republic	Czech Republic
Technology Agency of the Czech Republic	Czech Republic
ESTONIAN ENVIRONMENTAL RESEARCH CENTRE	Estonia
Bundesamt für Bevölkerungsschutz und Katastrophenhilfe	Germany
City of Wuppertal	Germany
Climate Service Center (Helmholtz-Zentrum Geesthacht Zentrum für Material- und	Germany
Dahlem Beratende Ingenieure	Germany
Deutscher Wetterdienst (DWD)	Germany
Dr. Pecher AG	Germany
Forschungsinstitut für Wasser und Abfallwirtschaft an der RWTH	Germany
Heich Consult	Germany
Helmholtzzentrum für Umweltforschung (UFZ)	Germany
hydro&meteo GmbH & Co. KG	Germany
Ingenieurbüro Reinhard Beck	Germany
Institut für Siedlungswasserwirtschaft der RWTH Aachen	Germany
Institute of Urban and Transport Planning, RWTH Aachen	Germany
ITT - Cologne University of Applied Sciences	Germany
Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern	Germany
Landesamt für Umweltschutz Sachsen-Anhalt	Germany
Ministerium für Klimaschutz, Umwelt, Landwirtschaft, Natur- und	Germany
Municipality of Hagen, Environmental Planning	Germany
Ruhr-Universität Bochum	Germany
Stadt Münster	Germany
Stadt Wuppertal	Germany
tandler.com GmbH	Germany
TU Dortmund University	Germany
Umweltbetrieb Bremen	Germany
United Nations University, Institute for Environment and Human Security (UNU-EHS)	Germany
University of Bonn	Germany
University of Kaiserslautern, Institute of Urban Water Management	Germany
Wirtschaftsbetriebe Duisburg - Anstalt öffentlichen Rechts	Germany
Wirtschaftsbetrieb Hagen - WBH - Anstalt öffentlichen Rechts	Germany
WSW Energie & Wasser AG	Germany
Wuppertal Institute for Climate, Environment and Energy	Germany
Wupperverband - Körperschaft des öffentlichen Rechts	Germany
University of Latvia	Latvia
Institute of Transport Economics (TOI)	Norway
Kalmar County Administrative Board	Sweden
Department of City Management, The Hague	The Netherlands
James Madison University	USA

At the end of day 2, all external participants were asked to fill in an online questionnaire. The collected feedback constitutes part of the project overall validation, documented in the D2.3 Product validation report V3.

Contents of keynote lectures (day 1)

Prof. Stefan Greiving's lecture "*Climate change and challenges in urban planning*" discussed three challenges for cities in the future. The first one is directly linked to climate change and the projected higher frequency of temperature extremes and heavy precipitation. How sensitive a city is to such hazards is depending on how the city works (housing, demographic conditions, land use). The vulnerability of a city in the future is likely to depend more on changes in the sensitivity of the system, as compared to the climate change itself. Planning thus require evaluation of both aspects (comparing a future time window with present conditions).

The second challenge is that there will be other changes e.g. in economy and demography that will have an impact that may lead to both increased sensitivity and less capacity for adaptation measures. The third challenge is the fact that European cities often have been built up during many years and that the buildings are very persistent and can't easily be changed, if threatened by changing environmental factors. The message is: Mitigate climate change, Adapt to changes and Cope with uncertainty. Prof. Greiving then gave some examples of adaptation measures from German cities.

The title of Dr. Colin Jones presentation was "*Providing reliable estimates of regional climate change (for Europe)*". He started to show how the increased dewpoint temperatures will directly lead to increased hourly extremes in precipitation, i.e. more intensive rain events comes as a logic consequence of global warming. In continuation he explained how the new CMIP5 simulations, based on RCP emission scenarios, to be used as a base in the IPCC 5th Assessment Report, compare to the CMIP3 and SRES emission scenarios used for in the 3rd and 4th AR.

All climate model simulations exhibit significant levels of uncertainty, that tends to increase the longer you look into the future and the smaller the region is that you study. On the other hand the spatial downscaling is necessary to be able to reproduce observations (that have a small scale). This is performed with regional downscaling models that takes the global model results of 300 km down to about 25 km. To develop reliable estimates of future climate change we need to fully sample all sources of uncertainty. The ensemble approach, with multimodel and multiple realisations, is an important step to reduce uncertainty.

Prof. Steven P. Frysinger presented "*Environmental decision support systems: A human factors perspective*". The Environmental Decision Support Systems (EDSS) integrate many technologies like GIS, mathematical process models, Monte Carlo simulation, expert systems etc. However, their use in actual decisions is limited. Why? One problem is that the decisions are taken by very different individuals, with different technical background. Therefore the EDSS must be developed with focus on "interaction design". The first step is to identify stakeholders, then the users (the hand-on users as well as those that will work later on with the results) and get the support and feedback of those people during the software development. During the requirement analysis the needs are assessed and an analysis of the tasks that lay behind a decision procedure. In the end there must be priorities to certain type of users, as a generic EDSS is of no use for anyone. With an open and adjustable architecture the EDSS can be made to fit different specific groups of users.



Figure 1: Presentations in plenum during first day

Contents of SUDPLAN presentation (day 1)

The SUDPLAN Co-ordinator Lars Gidhagen introduced the SUDPLAN concept, which is to seamlessly integrate into one tool the access to present and future environmental and climate information with local model impact models. The implication is that you can now assess the possible effect of an urban infrastructure project under today's as well as future climate conditions.

The Common Services, which includes a climate scenario services and three downscaling model based services, were presented by Jonas Olsson, Lena Strömbäck and Magnuz Engardt. At the moment Common Services support five European climate scenarios that can be visualised and used for further downscaling. Moreover, the prominent Delta Change method for downscaling time series and IDF curves of precipitation was presented. Rainfall downscaling require as input either a high resolution time series or and IDF table from an arbitrary location in Europe. The local refinement of hydrological information in SUDPLAN is made by re-calibrating the HYPE model, only considering the upstream area of a specific location. After this automatic calibration, the local model can be executed to obtain future projections. The air quality downscaling require the upload of gridded emissions from the city of interest. The downscaling implies the execution of a 3D dispersion model on a high resolution grid over the city (typically $1 \times 1 \text{ km}^2$), using European scale results as boundary conditions.

Sascha Schlobinski presented the Scenario Management System (SMS) which includes the SUDPLAN GUI. The SMS has been developed on the basis of the geointegration platform *cids*, which is an open source toolkit to develop geospatially enabled information systems. The SMS provides user interfaces for services that offer projections of environmental variables affected by climate change and gives support to access, visualise, compare and export such data. There is also a model management aspect that allows both local and Common Services models to be configured, initiated and executed.

Frank Michel presented the advanced visualisation in SUDPLAN SMS. It is based on the open source World Wind SDK tool, extended with a SUDPLAN visualisation wizard. Examples of 3D visualisation were given for air quality in Stockholm and water inundation in Wuppertal.

The audience then received a presentation of how each of the four pilots has applied the SUDPLAN tool to a particular planning problem. As first presenter Guenter Grüber described the Linz pilot. The planning problem addressed in the Linz pilot is to assure that the combined sewer system does not cause excessive emissions of un-treated sewage water during intense rainfall, i.e. during occasions when storage capacities are exceeded and overflow is unavoidable. The Linz pilot demonstrates a SUDPLAN application where the local Sewer System Model (SWMM5) is integrated in the SMS and can be executed with Common Services rainfall projections as input. The results of the study performed with the SUDPLAN tools is that in the future, Linz will receive more rain during winter and less during summer, however rainfall intensity peaks will be higher also in summer. The increase in total overflow volume is approximately 20%.

Stefan Sander presented the Wuppertal pilot, where the SUDPLAN tool comes into the urban planning process as soon as a risk for surface inundation is detected in a particular part of the city, in connection with intense rainfalls. Like in the Linz Pilot the local models (both a hydraulic and a hydrological model) have been integrated in the SMS. Moreover, it is possible for the end-user to assess the impact of changes in the terrain, e.g. the building of walls or elevation of pedestrian sidewalks to investigate “what-if” scenarios and find the best planning alternative.

The Stockholm pilot was presented by Christer Johansson. The objective of this Pilot was to investigate the effects of climate change on future air pollution levels for a large scale infrastructure project. The case study was based on planning the realisations of a new road project for passing Stockholm. It was found that the climate change itself will only marginally change the air pollution levels between 2010 and 2030. However, the expected reductions of vehicle-induced NO_x emissions will contribute to significantly lower NO₂ and O₃ levels in 2030. The construction of the planned transit road does not affect the general pattern, not even as population weighted concentrations. However, the project will contribute to larger changes in exposure for those individuals living close to either the old existing or the new planned highway.

The Czech pilot, presented by Jan Mertl and Vladislav Bizek, has used the SUDPLAN air quality downscaling model to assess a series of urban scenarios. The first case was to study the effect of major reductions of emissions from coal-fired power plants, the second was the completion of a ring road around Prague and the third case assessed the impact of regional development with two new suburbanization areas. The Czech pilot also showed how projected air quality maps from SUDPLAN models have been used in CENIA’s INSPIRE Geoportal, providing public access to SUDPLAN results.



Figure 2: Live demo at one of the four stations, second day

Contents of SUDPLAN laboratory exercises (day 2)

Station 1: SUDPLAN application in Wuppertal: planning to reduce the effects of heavy rainfall and stormwater flooding

The Wuppertal Pilot was presented to three groups consisting of approximately fifteen people each. Participants gained insight in the Wuppertal planning workflow using the Pilot implementation. As an example the Wuppertal Lüntenberg manor house was used. We explained the potential threats in this area as given by present climate conditions and showed the possibilities that an urban planner has to take action by simulating different planning options with the help of the SUDPLAN tool and then presented the results of possible measures in 2D, 3D and 4D. Additionally, due to the seamless integration of Rainfall Commons Services, we demonstrated the impact of the planning options in the future using projected precipitation data.

Due to the interactive nature of the demonstrations participants were able to gain a deeper understanding of specific parts of the Pilot. Moreover, the participants showed considerable interest in the possibility to deploy the software for their city and publish the information generated by Commons Services.

Station 2: SUDPLAN application in Linz: planning to reduce the impact of combined sewer overflows on receiving waters

Depending on the nationalities present in the audience we gave three presentations, two in German and one in English, during which we could show the entire integrated workflow of the Linz pilot in a running SMS (the user interface of the SUDPLAN tool). We started the live presentations with an upload of historic rain time series to the SMS and how to create regional downscaled predicted rain time series out of this local data for SWMM model runs and CSO ETA calculations with the support of the SMS. We continued with a presentation of the SWMM model integration in the SMS and how to compare the results of different scenarios. Finally, we presented the on-line data integration in the SMS with data from the installed sensor network and data provided from the SCADA system of WWTP Linz, showing the automatic event detection for stormwater events and how the calculation for the sedimentation efficiency rates of the primary clarifiers at WWTP Linz work.

All presentations were done in a very interactive way with the participants. Main focus of the issues raised during the presentations concerned the transferability and needs of the application for other European cities.

Station 3: SUDPLAN air quality application in Stockholm and Prague metropolitan areas

Also here three presentations were made, two presentations focusing on the results obtained for the Prague area and one for the Stockholm area. The first presentation, with the Czech delegation in the audience, explored many of the possibilities of the system and continued for more than one hour. We compared five different projections up to the year of 2100 for temperature and precipitation in the Prague area, showing that the climate scenario model output for the historical period 1960-2010 compared well with measurements. We then analysed the likely future evolution of the long-range transported air arriving to Prague, showing that all available scenarios and pollutant concentration projections follow a slowly decreasing trend. This positive outlook is completely determined by the expected reductions in European emissions (the RCP4.5 scenario was used), however it should be noted that such an emission reduction is uncertain.

The next step was to study what will happen in the Prague area itself. The Pilot has assessed the impact on air quality of three local scenarios or urban planning options:

- a new peripheral highway ring around the city
- drastic changes in emissions from the largest coal-burning thermoelectric plants
- a regional development case with the establishment of two larger settlements (10 000 inhabitants) on two sides of Prague

The Pilot team then showed how the SUDPLAN downscaled air quality projections have been transferred to the CENIA Geoportal, so that the results are available for citizen as maps, together with other maps visualising environmental variables and population activities.

A similar presentation was later made for Stockholm, for which the case study assessed the impact of a new road project through the city. The audience discussed the possibility and required data to obtain similar projections for Germany, Norway, Austria and the Netherlands.

Station 4: SUDPLAN hydrological application in Sweden

We gave three demonstrations of the hydrology application, illustrating how the Scenario Management System (SMS) can be used for hydrological impact studies. The demo focused on showing how the information provided by the Common Services can be used to assess the range of and the differences between different climate scenarios for hydrology. We discussed the differences between the Regional Climate Model output and the bias corrected temperature and rain used as input to the hydrological engine. We then demonstrated pan European results for changes in several variables including drought and extreme events. Finally, we showed how a more detailed analysis can be obtained by using raw variable output and local calibration.

The audience was very interested and had many questions and input during the presentations. The discussion showed an interest in the hydrological applications and gave ideas on how it can be further developed for future applications of the system.

Experience

All SUDPLAN team members left Wuppertal with a feeling that “this has been a good event”. Moreover, the software worked all along the live demos, not always the case for distributed systems which are depending on servers in Germany, Sweden and Austria. A minor drawback was that there was no publically open internet access during day 2, which implied that external participants were not able to fill in the online questionnaire directly.

Especially the discussions and comments made during the second day proved that the external participants had the professional background we targeted, i.e. they could appreciate the new functionality offered by the SUDPLAN system. The possibility to assess various aspects – rain, hydrology, air quality – was recognized as a strength. A more general criticism was the unquantified uncertainty in climate projections, as well as the fact that SUDPLAN makes accessible only a few climate scenarios. One comment – “Excellent, but relevant?” - also revealed the need for the consortium to always exemplify how the results from the SUDPLAN tool can be used in the urban planning process. Clearly this differs from country to country (Prof. Greiving pointed out that EU lacks a legal competence for urban planning).

The SUDPLAN Common Services downscaling of future conditions could also be tested for other cities in Europe. A rainfall downscaling was performed for Frankfurt with data provided by one of the participants. An air quality projection for 2050 was performed for Barcelona, using emission data sent to SMHI before the workshop.

The participant list of names and organizations will be used for follow-up exploitation purposes, to take place mostly in 2013, after project formal end.

Conclusions

The SUDPLAN 2nd dissemination event was successfully accomplished as a workshop entitled Climate Change and Urban Planning, taking place in the Stadthalle Wuppertal (October 11) and Rathaus Wuppertal (October 12), 2012.

More than 50 external persons registered and attended the workshop. They came from Germany, Czech Republic, Nepal, Sweden, Norway, Austria, Estonia, the Netherlands and Latvia. As expected, the majority came from Germany, but there was also a prominent Czech five-person delegation (including officials from the Czech ministry of environment).

The first half day was introduced by three keynote speakers. They gave a project external perspective on three important topics of the SUDPLAN project: the need to take *change* (not only climate) into urban planning, the possibility to have access to reliable *climate projections* and the availability of user friendly *IT tools* to support the planning process. With this as a background, the SUDPLAN team gave their presentations, with a focus on what pilot end-users could achieve by using the SUDPLAN results.

During the second half day the audience circulated between four stations where live demos of the system were given. The demonstrations included the Wuppertal Pilot, the Linz Pilot, Air Quality (the Stockholm & Prague Pilots) as well as one station where the results related to hydrology were shown.

We received valuable feedback and made some contacts that will serve the follow up exploitation activities of the consortium.

The entire consortium was very pleased with the outcome of this dissemination event. The good attendance, together with the lively discussions that followed after especially the second day's live demonstrations, showed that the SUDPLAN concept raises interest.

Annex 1: Invitation letter for the Wuppertal event

SUDPLAN workshop in Wuppertal, October 11-12, 2012

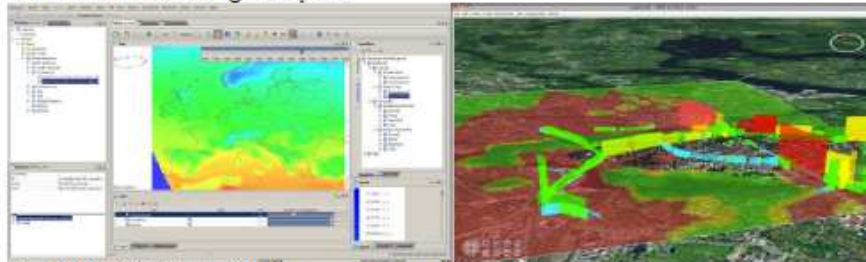
Workshop on Climate Change and Urban Planning - presentation of the SUDPLAN tool

The EU project SUDPLAN - Sustainable Urban Development Planner for Climate Change Adaptation – have developed a web-based planning, prediction and training tool to support decisions in urban planning, taking into consideration the expected effects of climate change. With project start in January 2010, we have now come to the point of demonstrating the results of the development work. This will take place in a lunch-to-lunch workshop in the city of Wuppertal, Germany.

Who are we targeting with this workshop?

You are community planner, responsible for the sewage system, the water treatment plant, the air quality management of your city or similar. You may also work in an insurance company or do consulting on environmental and climate change issues. You have a professional interest in how climate change will affect your city in terms of intense rainfall, temperature, river runoff and air quality.

What can SUDPLAN give to you?



The SUDPLAN tool will allow you to use global and regional climate model results – this without the need to be an expert on climate change yourself - together with your own local data, thereby improving the future projections of precipitation, temperature, hydrological conditions and air quality in your city. You can also integrate your local models into the system and use its advanced visualization techniques.

Program Thursday 11 October 13:00-18:00
Venue: Concert Hall, Wuppertal



- welcome by the Mayor of Wuppertal
- keynote presentations:
 - Urban planning challenges:
Prof. Dr. Stefan Greiving
 - Climate modeling for Europe:
Dr. Colin Jones
 - Decision support systems:
Prof. Dr. Steven P. Frysinger
- presentations of SUDPLAN components:
 - Common Services
 - Scenario Management System
 - advanced visualization
- presentation of SUDPLAN pilot cities
- demonstration of the SUDPLAN software

SUDPLAN workshop in Wuppertal, October 11-12, 2012

Program Friday 12 October 09:00-13:00
Venue: Lüntenbeck Manor House

There will be four laboratory stations where you can work hands-on with the SUDPLAN tool and perform downscaling:

- *Rainfall stormwater (Wuppertal)*
- *Rainfall sewage overflow (Linz)*
- *Air quality (Stockholm, Prague)*
- *Hydrology (Sweden)*



Interested to register for the workshop?

We welcome you who deal with urban planning and who has concern for what future effects climate will bring in terms of changes in precipitation, temperature, river runoff and air pollution. The workshop will focus real problems where software and model tools are used to find appropriate solutions. The tools developed in the four pilot cities are based on very flexible platforms and can be of use in many other European cities. So join us and judge yourself!

For registration and information, please visit:

http://www.wuppertal.de/geodaten/geodatenportal_nrw/sudplan/

If you want to test SUDPLAN Common Services urban downscaling for your own city, see our webpage <http://sudplan.eu/About-SUDPLAN/> and the requirement of input data to the left. Then add the message "Interested to try SUDPLAN downscaling with data from my own city" in your registration form and we will try to conduct individual demonstrations.

Practical details

The workshop and a dinner Thursday night are free of charge; however participants should cover their travel and hotel expenses. We have blocked several rooms in the Arcadia Hotel close to the Concert Hall until 8 September, please follow the Hotel link on the registration and information web site. If you have announced an interest of testing the SUDPLAN downscaling tool with local input data from your own city, you will be contacted by the SUDPLAN technical staff.

The SUDPLAN consortium warmly welcome you to join the Wuppertal workshop to learn about SUDPLAN and discuss climate change and urban planning issues!



SUDPLAN is an ICT FP7 project running 2010-2012.



www.sudplan.eu

SUDPLAN

Version: August 30, 2012

Annex 2: Agenda for the Wuppertal event October 11-12, 2012

Thursday October 11, 2012

1. **Venue:** Stadthalle Wuppertal, <http://www.stadthalle.de/en/haus/>

<i>hours</i>	<i>Session</i>	<i>Institution</i>	<i>lecturer</i>
1200-1250	Lunch buffet		
1200-1300	Registration		
1300-1310	<i>Welcome</i>	City of Wuppertal, Chairwoman of Environment Committee SUDPLAN project	Bettina Brücher Lars Gidhagen
1310-1335	<i>Climate change and challenges in urban planning</i>	Institute of Spatial Planning TU Dortmund University	Prof. Stefan Greiving
1335-1400	<i>Providing reliable estimates of regional climate change for Europe</i>	Swedish Meteorological and Hydrological Institute (SMHI)	Dr. Colin Jones
1400-1425	<i>Decision Support Systems</i>	James Madison University Harrisonburg, Virginia	Prof. Steven P. Frysinger
1425-1435	<i>SUDPLAN tool: short overview</i>	SUDPLAN project co-ordinator	Lars Gidhagen
1435-1445	Short break		
1445-1505	<i>Environmental models used in Common Services</i>	Swedish Meteorological and Hydrological Institute (SMHI)	Jonas Olsson Lena Strömbäck Magnuz Engardt
1505-1520	<i>Scenario Management System</i>	cismet GmbH	Sascha Schlobinski
1520-1535	<i>Advanced visualization in SUDPLAN</i>	German Research Center for Artificial Intelligence (DFKI)	Frank Michel
1535-1600	Coffee break		
1600-1700	<i>Pilot presentations</i>	Linz city Wuppertal city Stockholm city Czech region	Guenter Gruber Stefan Sander Christer Johansson Vladislav Bizek
1700-1730	<i>Demonstration of SUDPLAN tool</i>	cismet GmbH	Sascha Schlobinski
1730-1800 (latest)	<i>Questions, discussion Announcements for second day</i>		SUDPLAN consortium
1930-	Dinner		

Friday October 12, 2012

Venue: City Hall Wuppertal-Barmen (Rathaus Wuppertal), Johannes-Rau-Platz 1

<i>hours</i>	<i>Session</i>	<i>Institution</i>	<i>lecturer</i>
0830-	Transfer hotel Arcadia to City Hall		
0900-0910:	<i>Practicalities, instructions</i> Room number A-260 (second floor)		Stefan Sander Lars Gidhagen
0910-1210:	<i>SUDPLAN application in Wuppertal: planning to reduce the effects of heavy rainfall and stormwater flooding</i> Room number A-232	20 min demo at 0910, 0955, 1040 and 1125 25 min “assess issues raised by the audience” in between	Stefan Sander Holger Hoppe Martin Scholl
0910-1210:	<i>SUDPLAN application in Linz: planning to reduce the impact of combined sewer overflows on receiving waters</i> Room number A-232	20 min demo at 0910, 0955, 1040 and 1125 25 min “assess issues raised by the audience” in between	Guenter Gruber Valentin Gamerith Sascha Schlobinski
0910-1210:	<i>SUDPLAN air quality application in Stockholm and Prague metropolitan areas</i> Room number A-260	20 min demo at 0910, 0955, 1040 and 1125 25 min “assess issues raised by the audience” in between	Christer Johansson Jan Mertl Jens Weintraut Magnuz Engardt Lars Gidhagen
0910-1210:	<i>SUDPLAN hydrological application in Sweden</i> Room number A-260	20 min demo at 0910, 0955, 1040 and 1125 25 min “assess issues raised by the audience” in between	Anders Rimne Lena Strömbäck Thorsten Hell Jonas Olsson
1210-1300	<i>Online feedback</i> Room number A-232 Room number A-260		All participants
1300-1400	<i>Lunch</i>		
1400-	<i>Transfer back to hotel Arcadia (earlier transport can be arranged)</i>		

