



GRADUATION CEREMONY 2013: GLOBAL MARSHALL PLAN – A PLANETARY CONTRACT



BACKGROUND

The world is today in a difficult situation. The economic globalization is inadequately regulated by worldwide frameworks. It has unleashed the global economic system and brought down national constraints, a process that is accelerating. Concomitantly, the Primacy of Politics is lost as the core political structures remain national or continental, but not global. In its current form, the globalization process does provide certain chances for development, but it runs contrary to the goal of sustainability because adequate international standards and means of regulation are lacking. The current development is undermining the social and cultural balance as well as the ecological stability of the world. In this context, the energy and climate issue, poverty and hunger in a world of deficiency in food and an extreme instability in the global financial markets constitute massive challenges.

This situation is aggravated by the fast growth of the world's population toward 10 billion people and the fully understandable push of hundreds of millions more into resource-intensive lifestyles.

Any sustainable solution must deal in a global perspective with the central issue of limiting the consumption of nonrenewable resources and the ecological damage. Technological progress is powerful in reducing environmental stress per unit produced (dematerialization, eco-efficiency). In total, however, the burden on our ecological systems grows rather than lessens, due to the so-called boomerang effect. Yet every call for limitations, i.e. of carbon dioxide emissions, is foredoomed by the global issue of distribution that remains unresolved to this day.

There are two approaches to distribution: a „grandfather“ option that ultimately seeks to maintain the status quo (refusing the poor countries the same right to pollution that is allowed for the standard of living in industrialized states), or »equal allocation per capita« of pollution rights and their trade. The last approach offers a great potential, but needs international consensus, which is missing.

In a global perspective, that aims at the next 50 years, the current situation holds three possible scenarios for the future (in terms of attractors). Two of these are extremely threatening and incompatible with sustainability. Central to the scenarios is the question if two big postulates of global importance can be attained: (1) global protection of our natural environment and resources, and (2) respect towards the dignity of all people. If (1) fails, if we continue as hitherto, ecological collapse is inevitable.

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News and announcements



THE TOPICAL WASTE OFFICE TEAM



Since June 2013 the WASTE Office Team experienced drastic changes. Mr. Adolf Neuwirth, who was responsible for the WASTE Examination Office since the year 2007, left the university. We want to thank him for his great job he did for the WASTE program and we will definitely miss him!

The tasks of Mr. Neuwirth were taken over by Ms. Steinlechner, who already works as secretary in the WASTE Office Team. The duties of Ms. Steinlechner are among others: conduction of the application process including the pre-selection of the students and the admission (in close cooperation with the admission committee and the students' secretariat), organization of the examinations, collection of the grades, maintenance of a data base, issue of transcripts and the final certificates and diploma; the time schedule of the lectures and seminars, including the organization and reservation of the rooms of the lecture and seminar in close cooperation with other study programs like WAREM, MIP, Umweltschutztechnik, Verfahrenstechnik, etc.; to provide the students with official documents for different purposes like scholarships, residence permit, application for the Master's Thesis or Ph.D., different scholarships, e.g. DAAD and especially IPSWaT – International Post-graduate Studies in Water Technology including the application and nomination process, the contracts with the

scholarship donator (our Federal Ministry for Education and Research) and the scholarship holders, the payment of the regular installments, the participation of the scholarship holders in scientific conferences and the entire financial issues. Ms. Steinlechner also became treasurer of the WASTE Club Stuttgart e.V. and thus is responsible for the entire finances of the Club.

Right now the WASTE Office Team consists of seven members: Starting from left to right: Robin Lauber, Hiwi and student of M.Sc. „Umweltschutztechnik“; Marja Steinlechner, Examination Office and secretary; Ricardo Dias, Hiwi and student of B.Sc. „Immobilientechnik“; Dr. Ulrich Vogt, Course Director; Zhuguo Zhang, Hiwi; Hoda Tajrobehkar, Hiwi and student of B.Sc. „Medizintechnik“; Felix Wellenreuther, Hiwi and student of B.Sc. „Umweltschutztechnik“.

• Dr. Ulrich Vogt,
WASTE Course Director



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If (1) succeeds, the question is „how?“ Through power, to the benefit of few and the detriment of many? Then we would end up with so-called brazilianisation: a global too-class society, including massive impoverishment of large parts of the population in rich countries; a process that has already started. Only consensus can lead to a model with perspective: an eco-social market economy; that is a market economy for the world, regulated towards social and ecological requirements needed for sustainability.

Ecosocial market economy

The solution is to advance on a global economical level the basic ordoliberal approach of eco-social, regulated markets that is typical for Europe (social market economy) and some Asian economies (network economies). One current model of this approach is a Global Marshall Plan that links the establishment of adequate structures and the enforcement of standards with co-financing of development.

The efficiency of such approach is evident from the successful enlargement

processes of the European Union. Also, the Montreal Protocol proves the success of the model on the international level.

In this view, the ecosocial market model seems to be the promising option for peace and a sustainable development. It contrasts with the market-radical model of an unleashed economy (turbo capitalism) that imposes neither adequate environmental nor social responsibility. However, the market-fundamentalist view is deeply engrained in many heads through media manipulation, a fact that encumbers any counter strategy. Forced to operate under false preconditions, double strategies are necessary: we must develop a sensible design for the global economy (active shaping of globalization), while being successful in markets operating under inadequate roles.

As long as an acceptable global framework is lacking, we must focus on organizing intelligent defence processes for whatever working social and ecological regulations we have in the countries of the world.

The Global Marshall Plan: A step in the right direction

The Global Marshall Plan is a concept for a world in balance. It consists of five strategic cornerstones that are interconnected:

(1) The speedy implementation of the United Nation's Millennium Development Goals as agreed upon worldwide.

(2) To raise an average of US\$ 100 billion per annum in the period of 2008 to 2015 for development cooperation.

(3) To implement fair mechanisms to raise the funds needed. (For this and for

reasons of regulatory policy, a large part of the funds required shall be raised via taxes on global transactions and on consumption of global common goods.)

(4) The stepwise implementation of a worldwide eco-social market economy and the re-placement of global market-fundamentalism with a better regulatory framework for the global economy. A just world contract is needed.

(5) A fair cooperation in the spirit of partnership on all levels and an adequate flow of funds are preconditions for the establishment of a sensible regulatory framework.

• Prof. Dr. Dr. F. J. RADERMACHER
Universität Ulm

Prof. Dr. Dr. F. J. Radermacher, Director of FAW/n (Research Institute for Applied Knowledge Processing/n), Ulm, Professor for "Data Bases/Artificial Intelligence" at the University of Ulm, Member of the Club of Rome, President of the Senat der Wirtschaft e.V. (Senate of the Economy), Bonn, President of the Global Economic Network (GEN), Vienna, Vice President of the Ecosocial Forum Europe, Vienna.

More information is available for download on www.faw-neu-ulm.de or www.globalmarshallplan.org. On globalmarshallplan.org, you can subscribe to the weekly free newsletter of the Global Marshall Plan Initiative and order books.

Recommended readings:

Gore, A.: The Assault on Reason. Penguin, 2008.

Radermacher, F.J.: Balance or Destruction: Ecosocial Market Economy as a Key to Global Sustainable Development. Ecosocial Forum Europe (ed.), Vienna, 2004, ISBN: 3-200-00079-1

Stiglitz, J. E.: The Price of Inequality. How today's divided society endangers our future. Norton, New York, 2013

THE WASTE WELCOMING SERVICE - CONDUCTED BY WASTE STUDENTS FOR WASTE STUDENTS

There are two programs offered by the International Centre of the Universität Stuttgart that help the new international students to adapt their lives in Germany, regardless of their study field. The Mentoring Program is helpful for the



students who have problems along their studies. The Welcoming Service includes a pick-up service and help with formalities after arrival. The buddies may be responsible for more than one new student, just for a short period of time until the formalities are completed. The idea of providing a joint program, now known as the WASTE Welcoming Service, from Waste students to Waste students, was conceived by prior generations. In the summer semester 2013 we

had the privilege to be the first to experience it.

Besides supporting the new students as they begin a new life in Stuttgart, the objective is to provide a link between the higher generations and the coming one, bringing these closer together. Experienced students can

advise the new ones in student affairs, but also about socially integrating in their new environment, getting them also to know the WASTE family. New students are accompanied through official processes, getting help in the successful acquisition of essential documents such as their residence permit, insurance and bank account. Likewise, and more important for the Program, they are offered the opportunity of beginning longer-lasting relationships, which

can grow in common activities that come along in the Master Program. This maybe a beginning of a lifetime friendship!

This first experience has been regarded as extremely positive, both by buddies and new students. From the organizational point of view, it is worth noticing how buddies were willing from the beginning to participate and their great interest during the whole process, from training to the end of their duty. What more satisfying is to see how the objective of bringing generations closer has been accomplished. This was evident in the organization of the very first big joint event: the Graduation Ceremony of generation 2011. Of course, some things can be improved for the next year, but this experience overall has proven to be worth repeating. To all the participants: **Excellent job! We are very proud of you!**

• Daniela PARRA (WASTE student generation 2012)
• Hoda TA]ROBEHKAR (Member of WASTE Office)

GRADUATION CEREMONY 2013: PROF. BAUMBACH AS GODFATHER OF WASTE STUDENT GEN. 2011



Dear guests, parents and relatives of our graduates, dear colleagues, but especially dear WASTE graduates,

You elected me as Godfather. For us, the Germans, the word Godfather is at first moment somewhat confusing, because in German language, „Gottvater“ ist God (or Allah) himself. But, of course I found the right meaning very quickly using translation. Let me explain how I understand my responsibilities towards you now: **You came here to our study program WASTE to learn how to save the world and I strongly believe you will do it.** I think this task is not easy neither for you nor for me.

If you look in the internet for the most polluted cities of the world you will find a ranking, e.g. made by the Blacksmith Institute in New York. I think there is no need to mention all of them; here are some examples: Beijing, Mumbai, Dhaka, Port-au-Prince, Dserschinsk in Russia etc. The mostly mentioned pollutions in these cities are: **Smog, which means polluted air, solid waste, waste water.**

There are also other problems like polluted soils, drinking water etc. But these first three main problems is exact the subject of our study program WASTE.

When you came here, first you learned what are pollutants and what are their sources, composition, impacts etc. Then, you learned methods how to avoid them or how to treat or to remove them. You learned technical removal systems and the state-of-the-art technology. We are convinced, of course, that this knowledge is crucial to understand the problems. However, the solution of these problems cannot be only technical ones. There are especially social and financial aspects. About those important issues Professor Radermacher will

give you and us some ideas in his speech later (see Page 1).

But now what can you do directly? I think we should not only demand measures from others and from policy, but give your own contribution.

First of all: **walk around with open eyes.** You should recognize the environmental problems by your own and not only view them in the internet or in the media. You should not only commit yourself for environmental protection because there are laws and limit values. You should identify the problems, also by your own observations, e.g. observing smoke plumes, bad odours, waste in the landscape, etc. When you have your personal feeling that there is a problem, try to analyse it and try to justify your feelings.

One example: There is a family complaining about wood combustion smoke from the neighbour building. You are asked to assess this problem. So, you can start on your computer a dispersion modelling program and calculate the pollution load. Then you find out that this problem is not so severe since the annual limit values of PM, CO, Formaldehyde etc. are not exceeded. So do you think the problem is solved? The neighbour is, furthermore, suffering under the smoke events. So, look personally to identify the problems and listen to your feeling and then start scientific solutions.

Next: **what you can do?** Try to give a good example personally. I told you in my lectures that your efforts for improving the air quality are not convincing if yourself are smoking and polluting the air. There may be many other examples. Your behavior should be always affected by responsibility towards the others and towards the environment; let me name this a responsible lifestyle.

I have a personal wish:

The worldwide consumption of meat increased from 64 kg per capita in 2001 to 88 kg per capita in 2009. Now it is not increasing any more so drastically. The US Americans had in 2003 the highest meat consumption of 123 kg per capita.

You should know that the demand for meat in Germany only can be covered by intensive mass animal farming. This inten-

sive animal farming causes environmental problems on the one hand, ammonia, odour, CH₄ and microbe emissions, and problematic waste water. The ammonia forms together with NO_x aerosols which contribute to our background PM load.

The food production via animals needs much more energy than eating directly the plants. **So to eat less meat is a measure against hunger in the world.**

Last but not least: **We should consider animals as living creatures and not as industrial goods. So, we should treat them with respect.**

I have some other advices for you:

- **Be careful that you are not overloaded by emails and that you do not sink in the Internet!**

- **Preserve a view for the real world!**

- **Do your task with endurance, bring to an end what you started and do not give up!**

- **Be helpful to others and be a good team player like you did it for this nice ceremony. You will see, you are much more successful this way than e.g. complaining on others.**

The last question:

How long will your task last to save or to improve the world? I would say: forever!

Stay in contact with your student colleagues. This is a part of peace making.

And the question: How long do I have to stand by you?

My capacity to write recommendation letters is limited. But, our staffs and I try to support you as well as we can.

I wish you the best for your future life and the endurance for saving the world!

• Prof. Dr.-Ing. Günter BAUMBACH
WASTE Study Dean



DATES TO NOTE

- Waste Intercultural Meetings "WIM" in upcoming summer semester every 3 - 4 weeks
- Oct. 14th 2013 - Feb. 7th 2014: Lecture period

- Dec. 23rd 2013 - Jan. 6th 2014: Christmas Holidays
- Jan. 17th 2014: Registration deadline for exams (1st semester)
- Feb. 15th 2014: Application deadline for

13th generation starting in Sep. 2014

- Feb. 24th 2014 - Mar. 21st 2014: Exams period (students of 1st and 3rd semester)
- Mar. 24th 2014 - Apr. 4th 2014: Re-exams period (students of 3rd semester)

GRADUATION CEREMONY 2013: CONGRATULATIONS, THE BEST STUDENTS OF WASTE GEN. 2011



RECOM Services GmbH donated as last two years, 1000 Euro for the best WASTE students. This year the amount was split into three parts, as two students had exactly the

same GPA. WASTE Club Stuttgart e.V. donated a reward of 200 euro to one of the two 3rd best students.

In the Graduation Ceremony on November 16th, 2013 these best four students of WASTE gen. 2011 got their reward: Mr.

Jiangtao LU (China) received the first prize, Mr. Hesam Ostovari (Iran) the second, Ms. Maria IOSIFIDOU (Greece) and Ms. Qian YU (China) share the third prize.

• Marja Steinlechner
WASTE Examination Office

JIANGTAO LU: 1. AWARD



which offers me a broad horizon to get in

I am planning to go further for a doctoral study, which is evoked by the 7 months' master thesis life in BASF. Nevertheless, first I would like to express my great appreciation to WASTE program,

close touch with top experts and advanced technology, including this previous opportunity to write my master thesis at BASF. I feel so lucky that I selected such a well-organized course to build a steady basis for my future career. Although an excursion was organised in the third semester, I got a deeper understanding of BASF during the last 7 months. Here, thousands of new ideas are developed everyday, engineers are ex-

changing their brain-storms at all time, and trial and error is the most interesting way to push the front of chemistry forward. It is so fascinating to do some researches you like and to witness the successes which may lead to a historic revolution. BASF life gives me the chance to work with a group of top engineers and makes me to have an ambition to join them in future. That is the reason why I wish to go for a Ph.D. study.

HESAM OSTOVARI: 2. AWARD



guy's are the best crowd in the universe! Furthermore during my time in WASTE many lecturers helped me. I really appreciate their effort specially Dr. Eiden and Dr. Vogt who was always my incentive

Award of second best student gave me an opportunity to write a little bit about my experience in the last 2 years. First of all I want to thank all of my colleagues from generation 2011. You

with his positive energy. When I came to WASTE, suddenly, all of my life was changed. I lost many things and I gain A LOT more. I never regret what I have lost and I am proud of what I have gained. I found a new home! Stuttgart Vaihingen will be my home forever. I found friends from all other the world. I experienced a lot and I learned a lot. I had the best 2 years of my life in WASTE. I was enjoying every moment of it, party time, exam time, summer and winter time. Because of that now it is so hard to make a decision for my next step, for my future. As Prof. Kronenburg said now we

have to be strong enough to decide the next step. Remember we have to be good in what we are doing, then a lot of opportunities will come. I am still searching for the opportunities and compare them so now I am not able to say what exactly will happen. For my near future I am looking for a job in order to gain more experience in real industry but I know sooner or later I will be over it and I will start a Ph.D.. Thank you all for this amazing journey I never forget you, you are always in my heart!

MARIA IOSIFIDOU: 3. AWARD



Master Program. It was a memorable experience, one that I will always remember.

As for my plans for the future, these are to return to my home country, Greece, after I finish with my Master Thesis.

I feel very lucky and grateful to have taken part in the WASTE

I have had the chance to gain important knowledge from the professors, and other experts in their fields, and I feel confident and ready to implement it when I return to my country. Environmental protection and especially waste management are emerging issues that need to be taken care of, and I hope to play my part in improving them in Greece. Currently, the knowledge and field of application of the measures we have learned in Germany are not that well

spread or applied in Greece, there is a lack of expertise in these fields, and I hope to reduce this gap by contributing with the knowledge I have gained over the last two years in Stuttgart.

Besides the studies, through the WASTE Master Program I have had the chance to meet wonderful people from all around the world with whom I wish to stay in touch also in the future and exchange experiences and knowledge.

QIAN YU: 3. AWARD



had enormous fun studying as well as ex-

First of all, I'm so glad that I chose WASTE program as my graduate study. As far as I'm concerned, WASTE not only encourages interdisciplinary research but also provides many extracurricular study opportunities. I indeed

changing ideas with professors and other colleagues. From my two-year experience, on one hand, I accumulated useful knowledge in the environmental protection fields, and on the other hand, my sight and horizon are broadened during lively practical activities.

In addition, as a graduate student, I find my interest in Process engineering was developed throughout my school years and has been augmented at every chance

by in-depth investigation. Therefore, I aim at a further study in the future. China, my homecountry, is suffering a big problem in environmental sustainable development, especially in the area of air pollution control. There will be higher demand for environmental protection experts in my homeland. I feel very honor that I can contribute more in this area.

All in all, I'm very proud that I'm one part of the entire WASTE family!

Studying WASTE

MY FIRST EXCURSION AT ISWA



My first time at ISWA and it had to snow that heavily! With a little reluctance to go back to the cold, began our visit in the WWTP. In my point of view, it was really good to visit the plant once we had attended the lectures. It all became real in my eyes, and many things that were described in class started to make more sense. We made our way through all steps of the waste water treatment and saw the conventional things you can get in the sievings, the changing colors of water as it is treated; smelled the chemicals and even

got sprayed at the micro filtration drums. Three different types of settling tanks, the disks full of microorganisms (looking like jello), and the impressive final concentrations, along with interesting anecdotes and experiences that have resulted in new research projects, made this visit worth even under that snow. The group that went after ours had a better fortune with the weather, but for what it is worth, I believe we all left the plant satisfied with the experience and, probably, with more tools to face the oncoming exam.

• Daniela Melissa PARRA BENAVIDES
WASTE student generation 2012

EXCURSION TO MVV INCINERATION PLANT AND BASF SEWER SLUDGE PLANT



As a part of the Thermal Waste Treatment course the students of the generation 2012 visited two industrial facilities, thematically related to the content of the lecture. The excursion was organized by Prof. Seifert and it took place on June 26th. 2013. The

first step of the program was to visit the MVV incineration plant in Mannheim, that processes mixing of municipal waste as well as industrial and commercial waste. There the group was given the opportunity to listen to the presentation about the company and have a guide-tour to the bunker, pusher grate firing and flue gas cleaning system.

The second part of the excursion was the visit to the BASF sewer sludge plant in Ludwigshafen. BASF wastewater treatment plant treats both the production and municipal wastewater and is one of the biggest plants of its kind in Europe. The produced sludge (or more strictly filter cake) in the amount of 400 000 tons per year has to be incinerated. After the lunch the operators of the plant gave the presentation about the facility. Next

the guided tour with a focus on two fluidized bed incinerators took place. After the tightly scheduled day the group arrived to Stuttgart in the evening. For students it was very interesting and enlightening to see how the theory learnt during the lecture functions in practice at the real thermal waste treatment facilities. The excursion was enjoyable and it helped a lot to understand the discussed topics.

On behalf of all of us who participated in this excursion, I want to thank the professors and the people responsible for organizing it. It was a very interesting experience, in which we could see many of the concepts in reality that were explained in lectures.

• Adrian Artur STRZALKOWSKI
WASTE student generation 2012

EXCURSION TO DAIMLER AG, UNTERTÜRKHEIM

On September 26th, we visited the Mercedes-Benz-Werk in Stuttgart-Untertürkheim. We had a group of professors and students from the WASTE program. This excursion was organized as a part of the lecture „Primary environmental technologies in industrial processes“ by Prof. Kohler, the vice president of the research and sustainability group in Daimler.

Our excursion started with fresh delicious lunch at a first class restaurant there. Then we went to a presentation room and observed an informative presentation on the sincere commitment of the company in dealing with the environmental protection. There the presenter had a really interesting question to us, Whether the electric cars are environment friendly or not? We had a definite answer, „Yes!“ Then the presenter illustrated the theme as, „It depends on the source of the electricity. If you are

using the nuclear electricity for driving your car then you are hardly contributing towards the environmental sustainability. But if you are using wind electricity then you are in actual sense contributing to the environment.“

Then we had the most interesting part of our excursion. We had a tour inside the Mercedes Benz's largest engine producing plant in the world. Visiting the production line provided a detailed insight into the fascinating world of vehicle manufacturing. The tour began at the press/stamping shop where the parts first had been taking shape, to where the robots had been performing their „ballet“ in the body shop all the way to the „marriage“ of the body frame to the chassis in the assembly shop. Finally, we had some group photos in front of the factory and the excursion had come to an end. At last, I would like to thank all

of us who participated in the excursion, my special thanks to the responsible professors and people for organizing such an informative and interesting excursion. I had always been and still am looking forward for the next excursion.

• Md. Mahmudun NABI
WASTE student generation 2012



EXCURSIONS IN SUMMER SEMESTER 2013 WITH PROF. BAUMBACH

Definitely the highlights of the summer semester 2013 were the excursions organized by Prof. Baumbach. During these excursions you can really have an integral approach to the topics discussed during the lectures about the nature: ranging from sophisticated technological instruments at industrial sites to the types of trees and rocks in the surrounding natural areas. These excursions also offer a great opportunity to visit different places in Baden Württemberg, especially those in the Black Forest, to enjoy typical German food and foot tracks through the forest.

A good organization is the characteristic of these excursions. Usually it includes: a nice bus for the trip from the university to the sites

of interest and back; during the visit to the industrial site everybody gets special hearing devices so a clear understanding of the guide is ensured; a nice typical lunch from the region; a walk through the nature and of course everything with the guidance of Prof. Baumbach. Perhaps the only thing that would make it better is that if the dessert could be included in the lunch. Of course, these great excursions are only possible with the help of Ms. Radszuweit.



June 21st 2013, excursion to SAPPI Fine Paper

The first excursion was part of the lecture „Emissions Reduction at Selected Industrial Processes“. It is well known fact that the paper industry is a smelly industry. It is mainly because of the different sulfur compounds emitted during the process of paper production. But the paper industry is not only that, there are a lot processes involved to reduce emissions and also a lot of economic issues. After the visit to the paper mill, we were able to enjoy a nice lunch in Zwiefalten at the Klösterbrau Gaststätte

and then get a quick look to the Zwiefalter Münster, a nice baroque church next to the Zwiefalter Ach, which is a tribute to the Danube River. But, the day was not over yet and we had time to visit Lichtenstein Castle and enjoy the beautiful landscape there.



June 28th 2013, excursion to Lafarge

The second excursion was one week after the first one. This time we visited a cement factory. The cement industry is characterized for its great emissions due to the manufacturing process, and also a lot of dust can be found in there. Our guides were very friendly and gave us a nice explanation

of what is going on there. We had the chance to go to the top of the facilities and enjoy a great view of the surrounding area. After the visit to the cement factory we went to Bad Wildbad, where we enjoyed our lunch and the nice walk.

People could choose between walking up the hill or taking the cable car to get to the top. Once at the top we followed a circular path that took us inside the Black Forest where we could appreciate the different types of trees and how these were affected during the 80's and 90's when the emissions coming from northeast travelled long distances and reached the region provoking severe damage to the foliage of the trees.

excursion to the monitoring station in Schauinsland

As part of the lecture „Measurement of Air Pollutants“ we visited the „Messstation Schauinsland“. Schauinsland is a mountain in the Black Forest, near Freiburg, with an elevation of more than 1 200 meters above the sea level. It was a very sunny day, at least that was how it began when we visited this station. We were able to appreciate several of the instruments used to determine the air quality. Prof. Baumbach

explained the importance of this monitoring station and also the guide on the site provided a detailed explanation. Measuring the air characteristics can be a very complex task, as well as the instrument used for this purpose.

After visiting the monitoring station and a little walk, we had lunch in a very interesting place, a restaurant-house, whose building is covered on one side with solar panels. There the guide explained us how was the house self-sustainable. It was able to convert solar energy to electric energy using photo voltaic cells; it also had batteries for when there was not enough sunlight and a big wood reservoir. Just as we were having lunch a heavy rain started to pour on top of us, we waited a little bit until it calmed down, and after some minutes we started our descend to get to the bus that was waiting downhill. The walk

through the forest with a light rain was a really good experience. People should take more time to enjoy the nature.

There are rumors that Prof. Baumbach will retire soon, around September 2014. We hope after that

we could still have some high quality excursions like the ones offered by him. Taking part in these excursions was really a privilege and I would recommend them to everyone.

• Edgar David MATUS HUERTA
WASTE student generation 2012



TEXTILE INDUSTRY AND ITS POLLUTION

Textile industry uses a huge amount of water, energy and chemicals which pollute the environment. In addition textile processing has liquid, gaseous and solid wastes, some of which are hazardous.

1. Air pollution

Nitrogen oxides and Sulphur oxides from boilers are the main source of air pollutions in textile industry. Resin finishing, printing, dyeing, fabric preparation, and wastewater treatment plants are other sources of emissions. Hydrocarbons are emitted from drying ovens and from mineral oils during high temperature drying/curing. Formaldehyde, acids, softeners, and other volatile compounds are also emitted here.

Residues preparation from fiber sometimes emits pollutants during heat setting processes. Carriers and solvents may be emitted during dyeing operations depending on the types of dyeing processes used during the batch dyeing of disper-

se dyeing, where carriers are used which may lead to volatilization. Acetic acid and formaldehyde are two major emissions of concern in textile.

2. Solid waste pollution

Scraps of fabric and yarn, off-specification yarn and fabric and packaging waste are the main solid wastes in textile industry. They are non hazardous waste. There are also wastes associated with the storage and production of yarns and textiles, such as chemical storage drums, cardboard reels for storing fabric and cones used to hold yarns for dyeing and knitting. Cutting room generates a high volume of fabric scraps, which can often be reduced by increasing fabric utilization efficiency in cutting and sawing

3. Water pollution

A lot of water is used in textile industry from the washing of fibers to bleaching, dyeing and washing of finished products.

Approximately 200 liters of water are required to produce 1 kg of textile. Huge water usage means huge amount of chemicals. These can cause damage if not properly treated before being discharged into the environment. Wet processing creates the highest volume of wastewater.

The aquatic toxicity of textile industry wastewater varies considerably among production facilities. The sources of aquatic toxicity can include salt, surfactants, ionic metals and their metal complexes, toxic organic chemicals, biocides and toxic anions. Most textile dyes have low aquatic toxicity. On the other hand, surfactants and related compounds, such as detergents, emulsifiers and dispersants are used in almost each textile process and can be an important contributor to effluent aquatic toxicity, BOD and foaming.

• Imran TALIB

WASTE student generation 2012

A FIELDTRIP TO THE OSTFILDERN WASTE WATER TREATMENT PLANT

On Thursday June 13th, 2013 our group visited a small but old waste water treatment plant located in Ostfildern organized by Mr. Reinhardt from ISWA. One of the most attractive aspects of this field trip was the plant at Ostfildern was under expansion and the construction work was still in progress. We were given a detailed insight into various processes and different functions of the plant. Many students including me were thrilled by the experience of seeing a plant being built from scratch.

The sapping heat could not stop us from taking pictures of various parts of the

plant. The plant operators gave us inputs regarding the design of the plant and also the hardships faced by them during the initial design phase. This made us realise that plant design is not a child's play, but, requires immense knowledge



and dedication.

That Thursday, hot and windy weather continued for the whole day. That, however, did nothing to dampen spirits and enthusiasm and after an introduction to what was to be seen, we were eager to learn more about it. In a nutshell, this fieldtrip provided a platform for better understanding of the waste water treatment process.

• Deepak SRINIVASAN

WASTE student generation 2012

Recent events

GRADUATION CEREMONY 2013



„Welcome to our WASTE family“ was the first phrase they told us in our first WASTE meeting. For me the word family has a very deep meaning. It means among other things: trust, honesty, tolerance, responsibility, hardwork, team, love. All of

these things I saw them not only on the graduation day, Saturday November 16th, but also during the preparation of the whole ceremony.

I do not know many people from the WASTE generation 2011, and I think that is

the same for the majority of my generation. Despite this, I was so glad to see us working together: making decoration, cooking food, shopping for the ingredients, putting tables together, etc..

The place looked very nice at the end: the table for Prof. Baumbach, the curtains with hanging photos, the cups made with a WASTE sign, the bar, the long lines with delicious and international food.

The formal ceremony was nice.

It was good to hear the motivational speeches from the professors and how they transmit they were very proud of the students. I applauded a lot.

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>>> GRADUATION CEREMONY 2013



In my experience, one of the best parts of the graduation was the food (I think

many share with me this opinion). Since I have arrived to Stuttgart I have never eaten such good food and feeling so full. This also caused me trouble because there were so many delicious food, from so many parts of the world that I wanted to try everything, but unfortunately I got full quickly. I ate Brazilian, Columbian, Peruvian, Mexican (of course), Chinese, Morocco and Indian food... Oh my God, I think I have to lose weight now... Thank you everybody for sharing your dishes with us!

Another important details were the shows: the Columbian dancing group, the Indian dance, the musical group, the girl on

fire. I enjoyed seeing them all. I also think that the Tombola was a very good idea.

The music was good, we danced a lot, and we drank some cocktails (Caipirinha, Margarita). But the most important thing was that everybody looked very happy and the atmosphere was full of joy and celebration. I could see in the faces of the WASTE generation 2011 „WASTE WAS WORTH IT“. So now I only want to congratulate all the grads: Congratulations! You did it!

• Daniela MOLOEZNİK PANIAGUA
WASTE student generation 2013

WELCOME EXCURSION TO SCHLOSS SOLITUDE

Opinions from the WASTE students generation 2013:

„The visit to solitude castle was a good opportunity to meet our new classmates. We had to walk more than I have expected but I really enjoyed the forest and the interesting history of the castle!“

- Yuly Romero from Colombia

„I believe it was a wonderful experience to visit ancient site, just to have a feel of how life was centuries ago. Walking through the forest gave me an adventurous spirit.“

- Enoch Adotey from Ghana

„The visit was beautiful, especially the walk through the forest. I thank our Course Director for this wonderful beginning that helped us to know the 2012 and 2013 generations. I look forward for more excursions like this.“

- Meghana Krishnamurthy from India

„The best thing about the excursion was the opportunity to talk to my new classmates during our walk through the forest.“

- Douglas Rivera from Honduras

On September 14th, we had our welcome meeting to WASTE program as well as our first excursion to Schloss Solitude.

In the early morning our Course Director Dr.-Ing. Ulrich Vogt has informed us in a meeting about the next steps we would have to take in the program. He covered the entire WASTE course plan and informed our class of all the extracurricular activities we could participate in.

After that we went to the Solitude castle, and for that we have to walk through the forest (Wildpark) more than 6 km.

During this walk we talked about our countries, languages, culture, food, and it was really great because we are here to



learn as much as possible: from our professors, from our classmates, and from ourselves. Sometimes while meeting new people we can learn from each other things that we cannot answer by ourselves.

Finally we arrived to Solitude castle and we entered the castle in two groups because we were a huge group.

Our guide gave us an introduction of the history of this castle. Solitude Castle was built as a hunting lodge between 1764 and 1769 by Duke Karl Eugen of Württemberg. It was originally designed to function as a refugium, a place of quiet, reflection and solitude (thus the name) plagued by political and financial difficulties.

We could observe all the luxuries that royalty used to have, as the main idea to build with such extravagance, was the simple desire to show how much money was within the kingdom. Nowadays castles and not build any more, which is why the visit was an open door to learn about the architecture of the times when the baroque style was in full swing.

Everybody was tired and really hungry when we came back. Thanks to our

seniors that they were ready with the food and the dinner time started. There were so many dishes cooked for us, different kinds of salads, grilled meat of many types, pasta and noodles, breads, drinks, etc. All of us had sufficient food and all the fatigue from the walk was vanished. There were also a lot of games arranged by our seniors which every one of us played and enjoyed a lot.

Last but not the least it came the turn of music and dancing. First of all our seniors told us the WASTE traditional song „Tunak Tunak“ and we all danced. After that it was an open dance floor on which everybody showed their skills. There we came to know that we have a lot of good dancers in our WASTE generations. It was a memorable day for each of us. I can proudly say that it was a perfect start and I couldn't have asked for better.

Thanks to all my class mates, my seniors and the WASTE faculty for arranging such a wonderful event. It is a pleasure become a part of the WASTE family

• Nuria Belem CARRANCO TOLEDO
• Abdul SAMAD
WASTE student generation 2013

39TH WIM - WALDKLETTERGARTEN

On July 27th we were ready to get out of our studying mood and do some physical activities. The 39th WIM had been planned for „Waldklettergarten“. It was one of the hottest days in this German summer. Most of us were ready to go with bike, except some who found more excitement in an adventurous bus ride. Highly confident in our bike-riding skills, we climbed up the mountains of Rohrer Höhe. Followed by an exciting ride down the hill with insanely high speed! Fortunately, we reached the place with the same number of people that had left the Waste office.

After gathering



together, we took our safety equipments accompanied by a 20 minutes safety and equipment instruction. Then each of us practiced on a lab-scale version of a tree. The excitement was written on our faces.

There were three different paths with increasing difficulty. It was my first time to climb up the trees to that height. I was so afraid to walk over the thin rope, although I knew that it is completely safe and I wouldn't fall. Some of us were professionals and you could see them jumping and running with the speed of light through the obstacles and ropes. For 5 minutes, I was trying to force myself to walk over the rope. However, at the end, I didn't want to stop

going up the trees and we tried to walk over the hanged wooden steps without holding the safety ropes beside it.

At the end, some of us were resting and trying to chill out with a glass of beer while others were competing for the fastest person to go up the wooden wall or still hanging in the trees. Tired, relaxed, we cycled back to IFK and continued the rest of day with a barbeque and cold drinks.

I would like to thank our friends and Mr. Vogt who organized this amazing event. It was a great idea to organize this event, especially during the tiring preparation period for the exams. It helped us to refresh our minds and boost our study mood in just one day.

• Milad DEGHANIMOHAMMADABADI
WASTE student generation 2012

40TH WIM - THE OPERA NIGHT

On November 30th, we had the most artistic activity of WIM, „the Opera Night“. Some of the students from generations 2012 and 2013 went to watch opera. Although, on „France and China night“, we had been voted to see „La Cenerentola“, we could have not been able to buy the tickets. So we decided to watch another opera „La Damnation De Faust“. We had an appointment at 5 o'clock at the university S-Bahn station. We arrived just in a half of hour at the opera gate in city center. There we watched a luminous beautiful building. Near the entrance was a brief information that I found about Stuttgart opera house.

The Stuttgart state opera (Stuttgart Staatsoper) opened in 1912, forms part of the Stuttgart State Theatre (Staatstheater Stuttgart), which is a three-branch theatre complex (opera, playhouse and ballet) and represents the largest theatre of its kind in Europe. The opera house building is one of the few major German opera houses that was not destroyed in World War II.

After that we waited for other students to reach the opera house. Then, we bought tickets but we had an hour until the start of the opera. Despite the cold weather, we decided to visit the Christmas market. It was so crowded since many people had come to buy something for the New Year and enjoy their time in one of the last weekend of the month. When we were walking through Christmas market, many different shops attracted me. It was very interesting for me because I come from Iran and we do not have Christmas holiday in my country, so I have never seen Christmas market in my life. When we came back to the opera, it had just begun. The opera was a new adaptation from Faust story. I also could find basic information about the Faust story.



Faust is the protagonist of a classic German legend; a highly successful scholar but once dissatisfied with his life makes a pact with the Devil, exchanging his soul for unlimited knowledge and worldly pleasures. The Faust legend has been the basis for many literary, artistic, cinematic, and

musical works. The most famous one is Johann Wolfgang von Goethe's play.

All things include actors; music, dancing and singing were very wonderful, although it was in French language with German supertitle and I couldn't have understood very well. The opera was so amazing and it was also my first time to watch an opera. Then we took group pictures and went to a bar. It was one of my best nights during my life in Stuttgart, and I will never forget this night.

• Payman SHARIFI ABDAR
WASTE student generation 2013

Life after WASTE

PH.D. AT ISWA: 1. IOSIF MARIKAKIS, WASTE ALUMNUS GEN. 2005

It was just a little after I presented my Master Thesis at ISWA about the Mathematical Modeling of Trickling Filters when my advisor, also a former WASTE student, Fabio Pressinotti informed me that Ms. Prof. Steinmetz wanted to talk to me the next day. I did not have any clue what it would be about. We never really had a direct contact.



During that meeting a work as a research assistant at ISWA was proposed to me. Of course I accepted. The capabilities of the Institute in the field of water resources and sanitary engineering are huge, the scientists and engineers are competent, the prospect of a Ph.D is highly promising, the topic about fermentative hydrogen production from wastes is very interesting

and with a practical potential. My joy had sky-rocketed. The excellent grades after two years of hard studying during WASTE and the dirty work with sewage as HiWi and student at the institute was finally paid off. For the next 6 years I was daily walking through the forest to go to work from the campus to ISWA. Under every kind of weather. But, this was not the only difficulty.

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>>> PH.D. AT ISWA: 1. IOSIF MARIKAKIS, WASTE ALUMNUS GEN. 2005

More dirty work with sewage, lecturing of students and supervision just after being one, project management, reports, publications, conferences, the acquisition of projects for financing my Ph.D and of course the German working environment

had awaited me. Driving force was always the nice feeling of conducting qualified and scientific work of high standards. That something new is discovered and a solution developed by me will help to solve environmental problems. The professional life per

se. Finally, with the help of my colleagues and many students I managed to finish. The result was again more than rewarding. Distinction and the Award of the Friedrich und Elisabeth Boysen-Stiftung 2013 for my doctoral thesis.

PH.D. AT ISWA: 2. KRISTY PENA, WASTE ALUMNA GEN. 2006



My life after WASTE...that's kind of long to explain!. In 2010, I became part of the first generation of the International Climate Protection Fellowships from the Alexander von Humboldt (AvH) Foundation. I chose ISWA and Prof. Steinmetz as my Host. After my research year in ISWA, my project was the key for starting a Ph.D. at the same institute. I can say that the last 3 years have been ones of the most challenging times in my life, but as well one of the

greatest periods.

For instance, the AvH foundation has been the „encouraging light at the end of the tunnel“. They have given me the opportunity to attend many conferences which had contributed to my research. I have met very interesting people like Prof. Lettinga, Prof. Dichtl and Dr. Hallenbeck. These three people have enriched my research in so many ways. In addition, last year, the AvH invited me as well to participate in writing a chapter in the book „Mitigation climate change: The emerging face of modern cities“.

The final invitation of this year was to attend the COP19 in Warsaw, where I had the opportunity to be part at the climate change negotiations. It was such an encouraging meeting, since the Mexican delegation invited me to take part of some

negotiations with them. Of course as an observer!!!. Further, listening to different perspectives like NGO, public, government, etc. made me think that my job as „environmental engineer“ is highly relevant and that as engineer I should consider much seriously the political side of my career. The COP19 was not exactly an extremely successful negotiation and many open issues will be discussed next year in Lima during the COP20.

The experience I have gained, the adventures and the challenges that I have faced and so many other things have prepared me to face the „real word“. I am expecting to graduate in summer 2014. My conclusion is: once a Humboldtian, forever a Humboldtian...once a WASTE student, your life will never be the same! Take this chance to make the best out of it.

PH.D. AT ISWA: 3. KAREN MOARKECH, WASTE ALUMNA GEN. 2007

As I was finishing my master thesis at ISWA, Prof. Steinmetz approached me and offered me the option of working in the institute. I thought that as ISWA employee and PhD candidate I could improve my background in the Research and Education Field (or area). So, I first worked on a project where we had to test and improve the treatment of black water coming from toilets in motor caravans. This was my first experimental work in treating black water aerobically and trying to find out to which extend black water could be treated biologically in a small build-in unit. This made me think of how to determine the flexibility and ease the work with minimum involvement of the user. The approach also

raises questions in practice and implementation which highlights concerns towards the environment and human health. Further on, I wrote a proposal in “Combined energy and nutrients recovery from black water and urine and its potential integration in Lebanon” and received a scholarship for three years from IPSWAT. I have carried out the first part of the experimental phase which has been in batch experiments. I also supervised several master thesis topics at this level where I could teach students and exchange ideas. The



second phase of experiments has been delayed and the challenge of having enough representative input of black water has been faced. This had made me look up for alternatives and possible ways to continue with the work. One of the suitable solution was to get financed through a project, TWIST: Transitional ways in water infrastructure. The financial resources have been found for the needed facilities which would help the possibility of developing more results at larger scale. I am expecting to graduate at the end of 2014.

PH.D. AT ISWA: 4. CARLOS A. PACHECO BUSTOS, WASTE ALUMNUS GEN. 2007



In January 2007 I arrived in Stuttgart with a lot of new feelings and expectations. During my master, the time was amazing, the parties, the meeting

of international people and to learn their cultures, and in general the new information related to solid waste management and air quality made WASTE Program the unforgettable time in my life. When I came to Germany, the main idea was just to do my Master with the objective to come back to Colombia and to create my own company; however, destiny is full of surprises and I got in February 2009 the opportunity to

start with my Ph.D. in ISWA, supervised by Prof. Dr.-Ing. Martin Kranert. He told me in the first meeting, that for the Ph.D. I needed a scholarship. Then I applied to KAAD organization and thanks to God I got this scholarship. I started my Ph.D. in March 2009 denominated: **Aerobisation of old landfill with H₂O₂ as oxygen source.**

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>>> PH.D. AT ISWA: 4. CARLOS A. PACHECO BUSTOS, WASTE ALUMNUS GEN. 2007

At the beginning of the investigation, some objectives were posted, but the most important were: a) to reduce the aftercare period of old landfill; b) to find the optimum concentration of H_2O_2 to be supplied to old landfills as oxygen source; c) to analyse the internal changes produced by the injection of H_2O_2 to reactors with anaerobic conditions. The investigation in the first

years was not as easy as I thought, but I had a lot of energy and enthusiasm to find important results that can be applicable in the solid waste field. Over the Ph.D. time, I met great people, I had difficult moments and really nice moments, but at the end the satisfaction is unique. At the moment I am finishing my Ph.D. and I can say that the results have been successful. I can imagi-

ne that all the lecturers are interesting in the results of my Ph.D. research; however these will be presented in my dissertation which likely will be in February 2014. Then, **I invite all the fans of WASTE Newsletter and interested in my results to my dissertation and thus also we can celebrate together.** See you there!

PH.D. AT UNIVERSITÄT KASSEL: JOSE ABDON ORDONEZ WASTE ALUMNUS GEN. 2008



In January 2011, I finished my M.Sc. Program WASTE. I did my thesis at Fraunhofer IGB on the topic of anaerobic digestion of agro-industrial residues. It was a valuable and exciting experience working at this important institute. At first, I wanted to stay at Fraunhofer and continue my research studies on anaerobic digestion. However, at that time there was no possibility to get a full Ph.D. position. Nevertheless, I had another possibility at the University of Kassel. I met some researchers from the University of Kassel at the IFAT 2010. They were very interested in my background and invited me to be a guest researcher at the institute IWAW (Institut für Wasser, Abfall, Umwelt) in the department Environmental Engineering.

Although at IWAW there is research on anaerobic digestion as well, at that time there were more possibilities to focus on membrane technology for wastewater and drinking water treatment. It was basically a new beginning for me, but I accepted it as a challenge to my career and additional-

ly, I knew that Germany was a leader on membrane technology worldwide.

I started working there in February 2011, giving a helping hand to another guest researcher from Vietnam. The project was based on drinking water treatment with membrane filtration. I learned many new concepts and theory about this interesting topic.

I had the idea to make something similar in Colombia, my home country. So, I decided to write my Ph.D. proposal on „Small-scale decentralized water supply systems for remote and rural communities in Colombia, using membrane technology and renewable energy“. I applied for the scholarship IPSWaT from BMBF (Bundesministerium für Bildung und Forschung) and in July 2011 I was informed that I was granted the scholarship to continue with my Ph.D. Studies in Kassel.

During the time of my scholarship, I have had the opportunity to travel to my home country and to participate actively in an applied research project financed by the DBU (Deutsche Bundesstiftung Umwelt). My supervisor Prof. Dr.-Ing. Frechen has been working during several years in the development of a small and portable drinking water treatment device based

on membrane technology and that works also as a rapid response during disasters or emergencies. The name is WaterBackpack PAUL (Portable Aqua Unit for Lifesaving).

The DBU financed the donation of 6 filters PAUL to Colombia and this time, PAUL would be used as a decentralized water treatment plant in remote rural areas in Colombia. I helped organizing PAUL's installation and their follow-up during the project. For many of those communities, this was the first time to get free and safe water. The filters PAUL were spread

throughout all regions of Colombia, especially to indigenous or African descent settlements.

Nowadays, I use the results gathered from the PAUL-DBU-Kolumbien project as preliminary information for my experiments in Kassel: three different

lines of treatment based on membrane filtration without using chemicals during the operation and with a very easy maintenance.

My dream is to apply on a massive scale any of those small-scale decentralized treatment plants on different rural settlements of Colombia; thereby the gap between Colombian urban and rural areas on coverage of safe drinking water would be narrower.



Where to go in Europe?

EXCURSION TO BADEN-BADEN



The excursions organized by IZ were a big surprise to me and I knew for sure, that I would register. I decided to visit the Black Forest, because I knew that it is the most popular excursion and I really wanted to try the famous Black Forest cake.

I and my friend Nohe went together. On the September 28th we had to meet in front of IZ. I was so surprised, when the

half-full bus started at 8.08 am. The organizers said that we cannot wait more for the ones who are late and in Germany you have to be on time no matter what.

At 10 am we arrived in Baden-Baden. The bus stopped in front of the opera hall, which is the second largest in Europe.

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>>> EXCURSION TO BADEN-BADEN



We couldn't go inside, but from outside it looks amazing as well. We had a guide for 2 hours. She started with the history of the town. The German word, Baden, translates as „bathing, to bathe or baths“. During the Second Congress of Rastatt Baden-Baden was rediscovered as a spa town. The popularity of the city as a spa dates from the early 19th century, when the Prussian queen visited the site to improve her health. During the 19th century, the town rose to become a meeting place for celebrities, who were attracted by the hot springs as well as by the famous Baden-Baden Casino and the luxury hotels. I was astonished, when I understood, that in the

Radisson Hotel you can enjoy the thermal water in every room. In the town there are two thermal baths, the modern Caracalla Spa and the historic Roman-Irish „Friedrichsbad“, which we visited. It is conducive to relaxation, unique wellness and various spa treatments, but if you want to spend a whole day enjoying different procedures, you have to spend around 100 euro.

Our next stop was Germany's oldest casino „Baden-Baden“.

I was amazed at its extravagant interior and gripped by the thrilling suspense as you tempt fortune. Its history dated back over 250 years and was fashioned on the lines of French royal palaces. In the last century the casino was a social rendezvous for nobles and the elite. Nowadays it opens its doors to all of Baden-Baden's guests and visitors of the town.

After that we spend a lot of time visiting the city centre of Baden-Baden, walking on the picturesque streets. During

our free time, Nohe and I decided to have lunch. We went to a typical German restaurant, where I ordered liver soup. If I have to be honest, I didn't really like it, but at least I wanted to try it.

At 3 pm we started our way to the Black Forest. We went to small restaurant, where we had a presentation from a cook.

He taught us how we can make the famous Black Forest cake. What I learnt was that you have to use a lot of alcohol and a lot of cream. Cherries are mandatory, as well.

After having a piece of this delicious cake and a cup of tea, I was really sleepy. I spent the way back to Stuttgart sleeping on the bus. This was the

perfect end for my excursion.

• Vesela Ivanova VALEVA
WASTE student generation 2013



>>> EXCURSION TO HEIDELBERG

It was an extremely cold day and I think nobody was really well prepared for the weather that awaited us. We met at the IZ center at 9:00 am and after a two hours' drive with the bus we arrived in Neckarsteinach. There we had about one hour to explore the little town. We immediately headed to the beautiful castles that were standing on the hills. First we saw a private castle, to which the entrance was forbidden. Then, after a nice lady showed us the way, we found the ruins of Hinterburg.

We went up the tower to see an amazing view of the Neckar River. The time was a little bit short so we could not enjoy so much of the view.

There was a boat trip planned from Neckarsteinach to Heidelberg. At the beginning of the boat trip everybody tried to stay on the roof to enjoy the beautiful view, but as the wind and cold got stronger we decided to go inside. When we arrived in Heidelberg we were welcomed with a cozy and romantic atmosphere and immediately felt happy to be there. First we went to a small brewery called „Vetter“ where lunch was arranged for us. Everybody was



extremely satisfied with the meal, and was also able to try the local beer. When we finished eating a guided tour awaited us and we walked around listening to the many stories that Heidelberg's stones can tell. Heidelberg holds one of Europe's oldest universities and the oldest in Germany. We saw the Philosopher's Walk, where many important philosophers walked and also visited the out-sides of Heidelberg's castle with a gorgeous view of the city and the Neckar River.

The autumn made everything even more charming. One of the interesting and curious facts about Heidelberg was that the place was preserved during World War II, and until today there is no explanation why.

Some say that it was luck, others that there were other interests involved. But for us, it was great to see that lovely and cozy town is so well preserved.

Having these memories in mind and fully satisfied on experiencing a breathtaking trip we travelled back to Stuttgart.

• Luisa FEROLLA SPYER PRATES
WASTE student generation 2013

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