



Interreg

Austria-Hungary

European Union – European Regional Development Fund



REGIONET Competitive

REGIONET CASE STUDY COMPETITION

Titel: ReCross

Authors: Mladen Lazendic, Lisa Stier

The Case Study Competition REGIONET Competitive (Reg. No. ATHU007) is supported by the INTERREG V-A Austria-Hungary Program and funded by the European Regional Development Fund!



RE-CROSS

Idea contest REGIONET Competitive

Authors

Mladen Lazendic

Lisa Stier

Renewable Energies for the cross-border region Austria and Hungary

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Climate Change: a global problem with local impacts

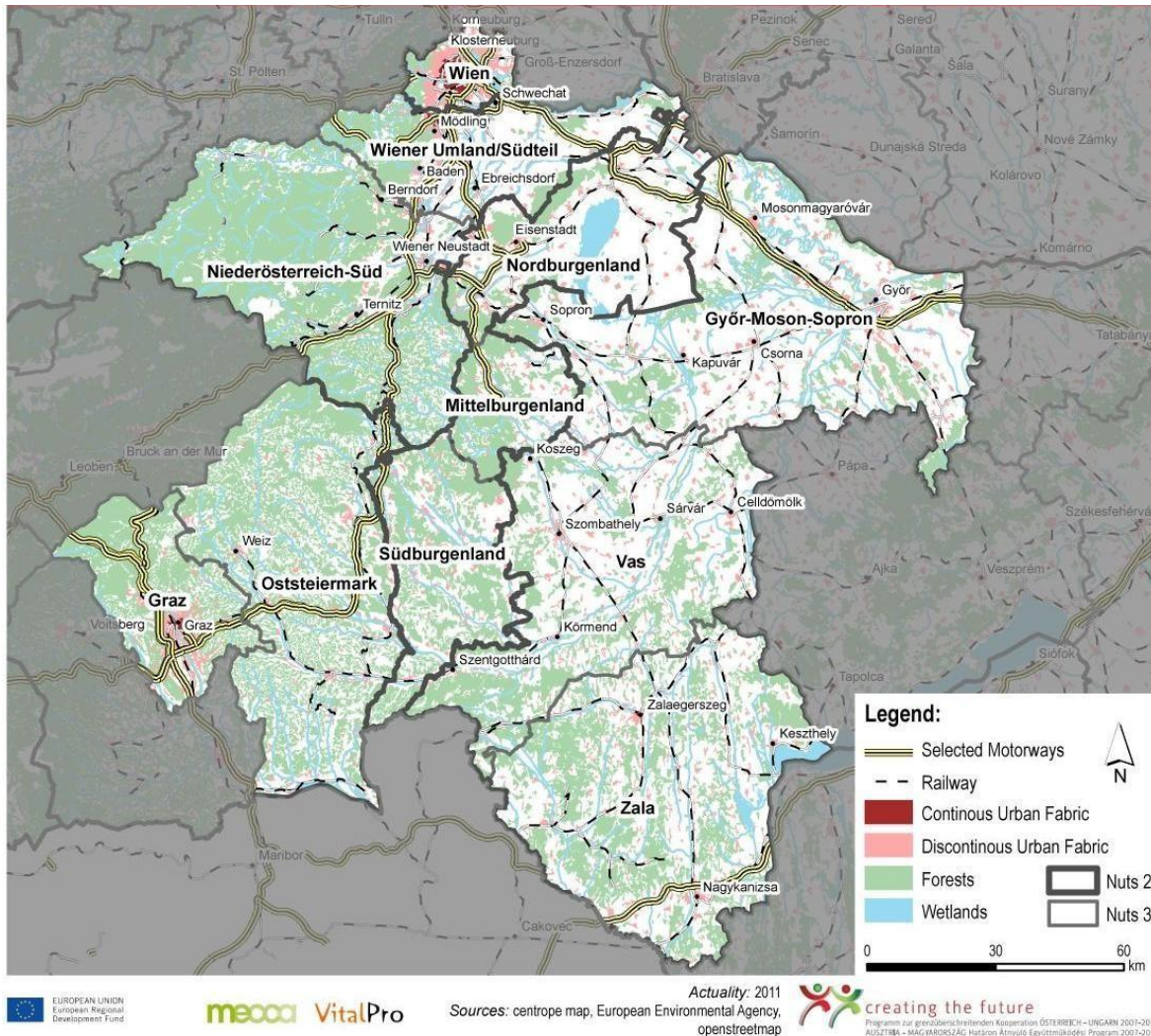
The current situation of global warming is one of the main topics in media worldwide. Climate change is popular for the cause of sea level rise. Austria and Hungary do not have an oceanfront, so why should people here care about global warming? First of all as an act of humanity, people should stay together and encourage each other to look for solutions for everyone's well being. And additionally climate change has many faces and some of them show up right in Europe. Extreme weather conditions happen more often, year by year. Days with extreme hot temperatures endanger children and elderly. Our soils and forests dry out. Forest fires happen, like in Podtrana, Croatia, in July 2017. Until on other days the long lack of water appears, but all at once. The dry soil at that point isn't able to soak up the rainwater and floods flush our cities and villages. Heavy rains cause incredible damages to houses, even whole villages like in Rhüden, Germany, in July 2017. The overall losses from weather-related disasters totaled 320 billion US Dollars in 2017. And also our health gets endangered by the relocation of biodiversity. In Karlsruhe, Germany, Asian tiger mosquitoes were found in 2017. They can transmit diseases like for example dengue fever or malaria. Also political discussions heat up the European Union, as climate change also causes refugees because of the dried out land. (Climate Reality, 2018)

Consequences of climate change are very diverse. They hit humanity worldwide - including Austria and Hungary. It is time to face the truth and work on solution approaches to save what can be saved. To find solutions it is important to find the root of the problem. In 2012 the biggest of all sectors influencing the greenhouse gases within the EU were the energy industries with 31%. (European Commission, 2016) The burning of fossil fuels is a ending story. It causes immense environmental damage and is also financially not sustainable. Therefore we were looking for a cross-border solution approach within the energy sector to support the change at its most influencing cause.

About Region

The project region is made up of Vienna, the surrounding area of Vienna / southern part, Lower Austria-South, the entire Burgenland, Eastern Styria and Graz on the Austrian side as well as the Hungarian regions Győr-Moson-Sopron, Vas and Zala.

Abb. 1: Border Region



ECOM HU-AT Netzwerkanalyse

The Austrian Border Region

Especially, Burgenland has been able to achieve progress over the past few years. This development is basically attributable to the fact that conditions have improved throughout the Land, creating more attractive locations for enterprises in sectors, which offer qualified jobs, have a more promising future, and also serve as drivers of further development (e.g. Technology- Centre Eisenstadt, cross-border business parks Heiligenkreuz and Szentgotthard). Technology and qualification policy measures will promote the emergence of regional competence centres (e.g. energy and facility engineering technologies, electronics and control), while educational institutions and the

creation of networks will link production with qualification, education and research to support such measures. With the exception of the tourism industry and public services, the tertiary sector in Burgenland is of minor significance. Particularly the tourism industry in conjunction with the health sector were able to expand and offer a wider range of health and wellness products in the southern parts of the Land, thus not only achieving growth in new markets and groups of guests, but also creating more jobs. Agriculture – production concentrates mainly in vegetables, fruits and wine – is very important in the northern parts and faces challenges from two sides: first, the adjustments and preparations in anticipation of the new framework to create by the expected EU accession of the neighbouring countries and second, the expansion into new markets and the search for new combinations of sources of income. Although these developments are very encouraging, we should not forget that the starting point of this positive trend comes from a level substantially below the average level of economic development in Austria. Special problems have emerged due to the structural changes of the past few years. Restructuring, closures and rationalisation measures have been the reason of losing a lot of jobs, especially in the southern parts, which could not be compensated. This trend affects mainly women who are generally less mobile due to their responsibilities (family, side-line farming etc.). The efforts to find a new orientation for the economy and to develop new regional focal points, are now starting to show the first success, but the weaknesses resulting from the smallness of the enterprises and the narrow scopes of action and cooperation have not yet been eliminated. (*AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006*)

Vienna plays an important regional role as capital, economic and labour market center in this border region. The existence of an urban agglomeration and its excellent infrastructure making large parts of the border region accessible are good prerequisites for the access to high-quality educational and research institutions and for the creation of an intra-regional division of labour, too. The weakness of Vienna becomes manifest in the steady declining of employment in the secondary sector. The service sector is expanding, but this is an atypical trend for cities of such a size and is emerging in sectors requiring only a low degree of qualification. The establishment of the core competencies of Vienna in the past few years has taken several directions. On the one hand, the potential, contacts and geographical vicinity to the CEE-countries predestine this city to become the hub between Western and Eastern Europe (East-West competence centre, centre for legal competence etc.), on the other hand, experience gained in the areas of transport and logistics, telecommunications, as well as urban and environmental technologies are being expanded into new core competencies. One of Vienna's main problems is the development of the labour market. Employment growth rates are much lower than in the surrounding regions, the rate of unemployment is much higher than in Austrian on average and more or less just as high as in the peripheral southern parts of Burgenland. The pattern is marked by a high share of long-term unemployed persons and other non-mobile problem groups. In the NUTS III border regions of Lower Austria, Wiener Umland Süd and Niederösterreich Süd development trends have very different focuses. In the immediate vicinity of Wiener Umland the service sector plays an important role. It does not only determine the structure, but also the pace of development in the region. The establishment

of new service centers for shopping and leisure also reflects this trend as does the expansion of the Vienna International Airport. The region NÖ Süd as a traditional industrial and traditional region for tourism is confronted with the consequences of structural adjustments. The loss of industrial jobs is being countered by innovation policy measures. The encouragement of small and medium-sized enterprises to make use of technological know-how (impulse centres and technology transfer) and the new orientation towards medical and environmental technologies and metal processing is also promoted by the specialised colleges. Tourist regions – former short-distance recreational areas both in summer and in winter – display enormous deficiencies and have been struggling with diminishing market shares for years. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The Hungarian Border Region

Before accession, the Hungarian border region used to be the only border region of Hungary on the EU. Bordering on four countries its population speaks seven languages. It is the gate of Hungary towards the European Union for 72% of all Hungarian outward transportation activities are concentrated on the bordercrossing points of this region. In West Transdanubia a longstanding tradition in cultural and economical openness is existing its economic strength and dynamism being second in Hungary next to the Budapest region. It is the second most attractive target region in Hungary to foreign direct investment and has an overall high rate of employment and low one of unemployment. Due to long term political isolation being beside the iron curtain the region preserved most of its natural and cultural heritage. . *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The economic dynamism, however, is spread in a highly uneven way in the Hungarian border region, the northern part providing bulk of the GDP. The economic growth is often cause of the comparatively low labour cost. Low value added production activities are centred in large industrial growth poles often lacking dispersed, knowledge based economic development and wide SME participation. The research and development capacity of the region is un-proportionally lower than its economic strength would reason (half of Hungarian average). This “R and D gap” highly endangers the sustainability and the long-term quality of the current economic dynamism. . *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The transport accessibility of internal parts of the Hungarian border region is poor, hindering both the development of the local economies as well as the emerging cohesion of the cross-border region. The large parts of peripheral, depressive rural areas pose difficult development tasks within the region, especially in its southern part. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

Győr-Moson-Sopron County is the largest, most resourceful and dynamic County within the CBC target region, being mid-way between Budapest and Vienna. There has been a number of key economic infrastructure elements developed in the 1995-99 programme period, especially in and around Győr. Development processes in the growth pole Győr shall be dispersed first among the County's as well as among the region's other towns by ways of innovative development means and market-led development instruments. There is a need to increase service and fourth sector activities, parts of the County becoming overtly industrial. Spending in research and development is by far higher in this county as in the other two in the target region, providing a good base for innovation-based business development. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The external infrastructure connections of the County are of highest quality, at the same time having huge need for improved internal and cross-border transport connections especially on the middle and southern parts of the County. Sopron may only meet its true development potential in case its accessibility is highly improved. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The border territories of the County, especially around Sopron have realised excellent results in tourism development in the last years, having still scope for improvement in soft environmental, conference and cultural tourism. Based on the experiences of the Nationalpark Neusidler See, similar cross-border initiatives are going to take root in the Szigetköz and Pannonhalma area. . *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

Vas County at the centre of the Hungarian border region shows mostly indicators mid-way between GyőrMoson-Sopron and Zala. Szombathely, Sárvár and Szentgotthárd has excellent economic results while other small regions as that of Vasvár, Öriszentpéter and Celldömölk indicate signs of development difficulties of the internal peripheries. There is a relative lack of SME initiatives and SME activities in Vas County as growth in outputs and export is triggered almost exclusively by multinational companies. The share of employees working in the industrial sector became the highest in Hungary here changing the county's employment structure radically. Low value added and low labour cost production poses danger especially in towns where "sole employer" companies exist. Research and development costs per GDP in Vas County do not reach one tenth of Hungarian average urging the need for knowledge intensive developments in the economic sphere. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

Szombathely traditionally is an important economic and social agglomeration centre also for parts of MidBurgenland. Interventions facilitating the mutually advantageous distribution of tasks and competencies in this agglomeration shall play an important role for the programme for instance with regard to the cooperation in improved transport accessibility, in higher education, in labour market relations and in an innovation based business development.*(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The Bük and Sárvár thermal tourism facilities, and the Örség, Írottkő Naturpark initiatives are the lead attractions in tourism development of the County. The bicycle tourism development of the 1995-99 programming period provide the tourism infrastructure for increased tourism and service sector activities in peripheral and rural areas – especially if the network will be taken to completion. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

For Vas County the external transport accessibility bottleneck between TEN corridor No IV and V together with neighbouring Burgenland both in North-South and East-West directions is a problem. Internal connections are to be reformulated to knit the traditional ties along the immediate border regions. A response for internal accessibility problems is being developed by ways of information technology network solutions. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

Zala County is the southernmost County in the Hungarian border region and the least developed part of the Hungarian border region. It does not directly border on Austria, nevertheless the strong co-operation in the Austrian-Slovenian-Croatian border regions is of a long tradition. Zala County is the home for small settlements (153 out of its 257 settlements count less than 500 inhabitants) that poses great difficulties for the infrastructure and the public utilities development, while hosting all the unfavourable economic and social consequences of rural areas lacking modernization centres. These areas are in need of innovative social and local economic initiatives by the know-how transfer from Austria; furthermore a improved internal accessibility both in terms of transport and telecommunication is needed. Zala County has great deposits of geothermal energy both for tourism and communal purposes. Its prime tourism attractions and the Balaton provide opportunity to link up with the other tourism attractions of the cross-border region into a coherent tourism-portfolio. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

The Austrian-Hungarian Border Region – Summary and Conclusion

A comparison of the strengths and weaknesses reflects the differing overall structural conditions along the Austrian-Hungarian border and points out the opportunities and risks. *(AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)*

Located at the intersection of three countries, the northern parts of the border region (Nordburgenland, Wiener Umland Süd, parts of NÖ Süd, Vienna, county of Győr-Moson-Sopron and northern parts of Vas County) have clear locational advantages with respect to overall settlement and economic structures and thus show a positive dynamic of growth. The vicinity to Vienna, the positive territorial effects of the ViennaBudapest economic axis and the dynamic small and medium-sized towns, as well as the region's

good infrastructure play an important role. (AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)

The situation is different in the southern parts of the border region, which are not only in greater distance to the West European economic centres, but have also poor cross-border intra-regional accessibility and weak economic structures. The prospering economic space Graz-Maribor-Zalaegerszeg-Szombathely fitted to the development of TEN corridor No. V, the foreseen recovery of the traditional Croatian contacts of the crossborder region and the improved North-South transportation conditions in order to link up with northern dynamics are the greatest opportunities thanks to the general improvement of the economic and social conditions of the southern border regions. (AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)

The region's development has been dynamic since the opening up of the borders. While the economy of Burgenland is the weakest of all Austria and the Land is situated directly on the border, the counties on the Hungarian side are among that country's strongest economies and only second to the capital region. Despite of the progress achieved in catching up, the discrepancy in the levels of prosperity and development with all of the positive and negative consequences pose the greatest challenge to the establishment of working cross-border relations. (AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)

Contacts and exchange at the personal, economical and political level have a long tradition along this border region and offer an excellent starting position for establishing and intensifying relationships on a regular institutionalised basis. In this context, the ethnic minorities on both sides of the border could play a major role (in Austria: Hungarians and Croats, in Hungary: Croats and Germans). (AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)

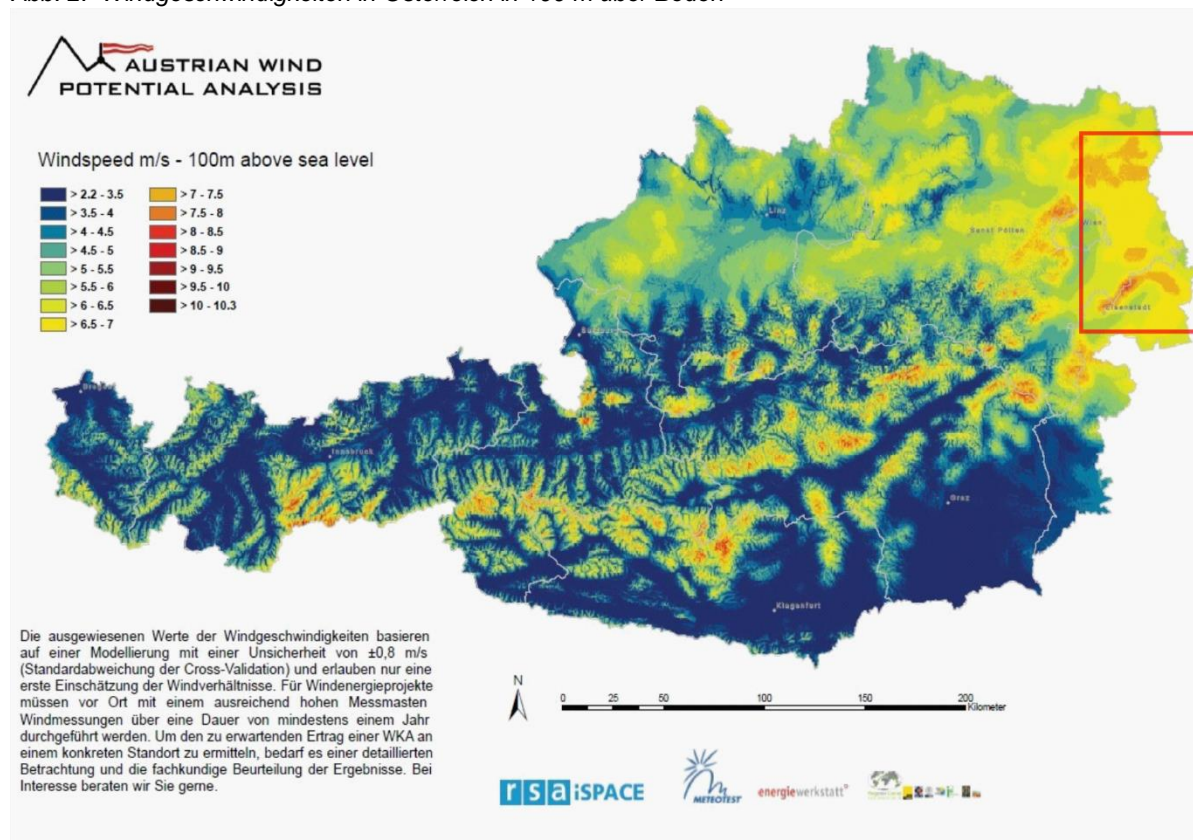
The opening up of the borders have made cross-border labour relationships more intensive. Better earning opportunities, as well as the possibility of gaining experience have motivated a number of Hungarian citizens getting a job in Austria near the border. A large share of this labour force is working in the service sector, in the field of construction and agriculture and to a lesser extent in the production. In an economically difficult situation, a rising number of foreign workers might create social tension. When developing the framework conditions with a view to establishing cross-border labour relations, special attention will ought to be devoted to this issue. (AUSTRIA – HUNGARY INTERREG IIIA, Community Initiative Programme 2000-2006)

Wind power in Austria

For a long time, it was assumed that the Austrian wind power potential is too small to be exploited by wind power plants. This assumption would have remained unchallenged if not for some "wind enthusiasts" who, in the late 1980ies, made their own measurements proving that the opposite was true: Some sites in Austria are among the best in Europe, at par even with regions in Denmark and Germany. The theoretical potential in the Alpine foothills and in Alpine areas has attracted attention only recently. In 2013 wind power

capacity additions in Austria reached a record: With an investment volume of 500 million EUR, 113 wind turbines with a combined capacity of 308.6 MW were installed. More than half of the new capacity – 52 percent – was added in Burgenland. For 2014, IG Windkraft expects another record expansion: Up to 170 wind turbines with a capacity of 483 MW are to be installed, implying investments of 630 million EUR. According to calculations of the industry association more than 4,600 people will then be working in the wind power sector. Wind energy will have to provide an important proportion of Austria’s power supply if the country is to build a sustainable energy system. At the same time, the preservation of biodiversity and the protection of valuable, aesthetically appealing landscapes must be guaranteed. Hence it is crucial to create preconditions that will enable the required expansion of wind power while ensuring that clear nature conservation criteria are met. Burgenland is an interesting case example of such a balancing act: A third of the province’s area are protected areas, while the northern part of the province (“Northern Burgenland”) enjoys very favorable wind conditions and managed to massively expand the use of wind energy in a very short time span. (WWF Information) *Burgenland - a Best Practice example for a sustainable development of wind power in Austria?2014*

Abb. 2: Windgeschwindigkeiten in Österreich in 100 m über Boden



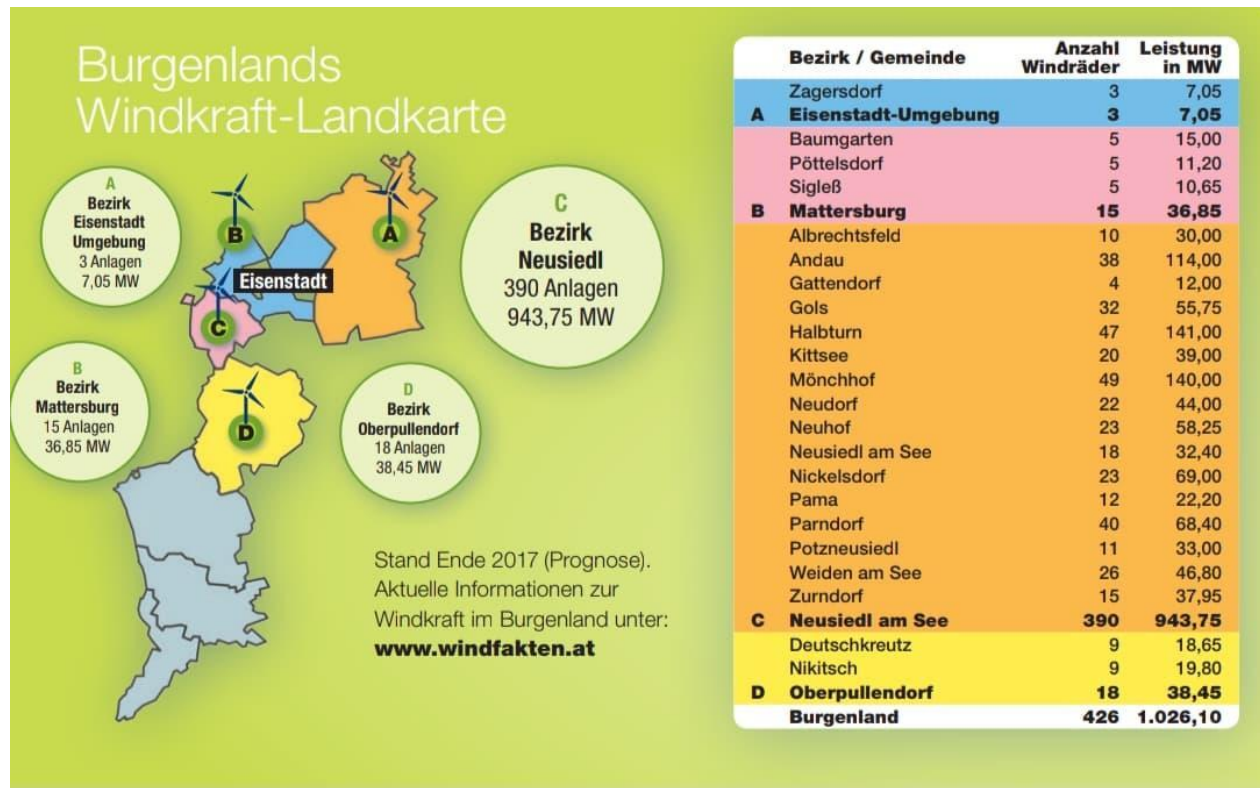
(www.windatlas.at)

Wind power in Burgenland

In Austria and internationally, Burgenland is a showcase region for the expansion of wind power. Just a few years ago, all the electricity needed had to be imported. In 2006,

it was decided in the state parliament to fully rely on wind energy. And only seven years later, in 2013, more wind power could be generated than the whole state consumes in total electricity. In just a few years, Burgenland has become a mere exporter of electricity to become a power exporter and can now deliver surplus electricity to other large consumer centers such as Vienna. And as experience has shown, wind energy is well compatible with the natural environment of the Neusiedler See National Park and the associated tourism. (www.windfakten.at)

Abb.3: Burgenland wind power map



(www.windfakten.at)

Burgenland has formulated the expansion targets for 2020 and 2050 and a corresponding "Roadmap" for achieving these goals in the "Energy Strategy Burgenland 2020". This document states that from the end of 2013, Burgenland's total electricity consumption can be generated from renewable energy sources. In 2020, at least 50% of the total energy demand should be generated from renewable energy sources, and by 2050, full energy self-sufficiency will be achieved. The roadmap aims to generate 2 TWh of wind and photovoltaic plants by 2020, with wind power with a total capacity of 1,000 MW providing the main share here. In the case of the 4.5 TWh planned for 2050, on the other hand, photovoltaics is expected to contribute a dominant share because a further technological leap in solar cells is expected by then. With regard to wind power, additional growth is to be generated after 2020, primarily from the field of repowering. Currently, it can be assumed that the stock of 770 MW will increase by 197 MW in 2014 and will reach

the 1,000 MW demanded by 2020 already in 2015. Statements by the policy regarding the rezoning of wind power areas suggest that at least another 300 MW of wind power can be built in Burgenland by 2020, the implementation of which is largely determined by the question of when and in which form the repowering of existing wind turbines starts. *(DAS REALISIERBARE WINDPOTENTIAL ÖSTERREICHS FÜR 2020 UND 2030----- Friedburg, 02.06.2014)*

Over the years, Austria has developed into a strong business sector in which domestic companies operate as technology suppliers or service providers to the global wind power industry. Every year, sales of more than 530 million euros are generated in this sector, with the export quota at around 90%. Wind power throughout Austria secures just under 5,000 employees a job. Important economic impetus from wind power in Burgenland In Burgenland, the construction of the wind turbines themselves is particularly important. Many local companies benefit from this: for example in laying cables, foundations, electrical installations, setting up wind turbines and subsequently their maintenance. Due to the intensive construction activity, large wind power companies also found their way to Burgenland. Since March 2013, precast concrete parts for wind turbine towers have been produced in Zurndorf at the German wind turbine manufacturer Enercon. This work is the largest of its kind outside of Germany. As Mayor Werner Friedl is particularly pleased: "With this work in our community, our people have come back home. They no longer have to commute to neighboring federal states because they have found high-quality jobs here. "Enercon alone employs 700 people in Burgenland. *(www.windfakten.at)*

Wind power potential in Burgenland

Wind turbines already generate around 130% of Burgenland's total electricity consumption, but the federal state has further enormous wind power potential. Even though Burgenland generates considerably more electricity than it consumes itself, the entire eastern region of Austria (Vienna, Lower Austria, Burgenland) only has a share of 69% electricity from renewables. As there are only very few areas available for wind farms in the city of Vienna, Burgenland has the opportunity to take on a further supply function for the federal capital in terms of electricity and to deliver not only good wine and vegetables, but also clean wind power to Vienna in the future. *(www.windfakten.at)*

The conversion of the power supply to renewable energies such as wind power is only the first step. For the energy transition to succeed, the other sectors - such as transport and space heating - must also be completely converted to renewable energy. Electricity and, above all, wind power will play an important role here, since mobility and heating systems will in future also be powered exclusively by electricity. Currently, 40% of the total energy required in Burgenland is generated by renewable energies. For the

success of the energy transition, therefore, the expansion of electricity generation with wind energy and other renewable energies must be pursued ambitiously. (www.windfakten.at)

Wind energy in Burgenland still has great potential that should be exploited. In addition, better technology makes the expansion even more economical. At new locations, modern, more powerful wind turbines generate much more electricity than the previous ones. At existing locations, several old ones can be replaced by a few new ones, generating significantly more wind power there. (www.windfakten.at)

How well wind energy is compatible with bird protection can be seen in Burgenland. Lake Neusiedl is one of the most important bird sanctuaries in Austria, and in its immediate vicinity are the largest wind farms in Austria. Bird protection was given priority in the selection of wind farm sites - in the designation of suitable zones by the Province of Burgenland as well as in the environmental impact assessment procedures. When the use of wind power was started in Burgenland, neither sea eagles nor imperial eagle brooded there, and the Great Bustards were also greatly decimated. Meanwhile, there are again rising populations and increasing offspring. A look at the development of wind energy and bird populations in this region shows that good use of wind energy and active bird protection are by no means mutually exclusive. (www.windfakten.at)

Even though Burgenland generates around 130% of its electricity consumption with wind energy, the entire eastern region of Austria (Vienna, Lower Austria, Burgenland) only holds renewable energies at a share of 69%. Since only very few areas are available for wind farms in Vienna, it is up to the two large wind power states to take over a supply function for the federal capital in terms of electricity. (www.windfakten.at)



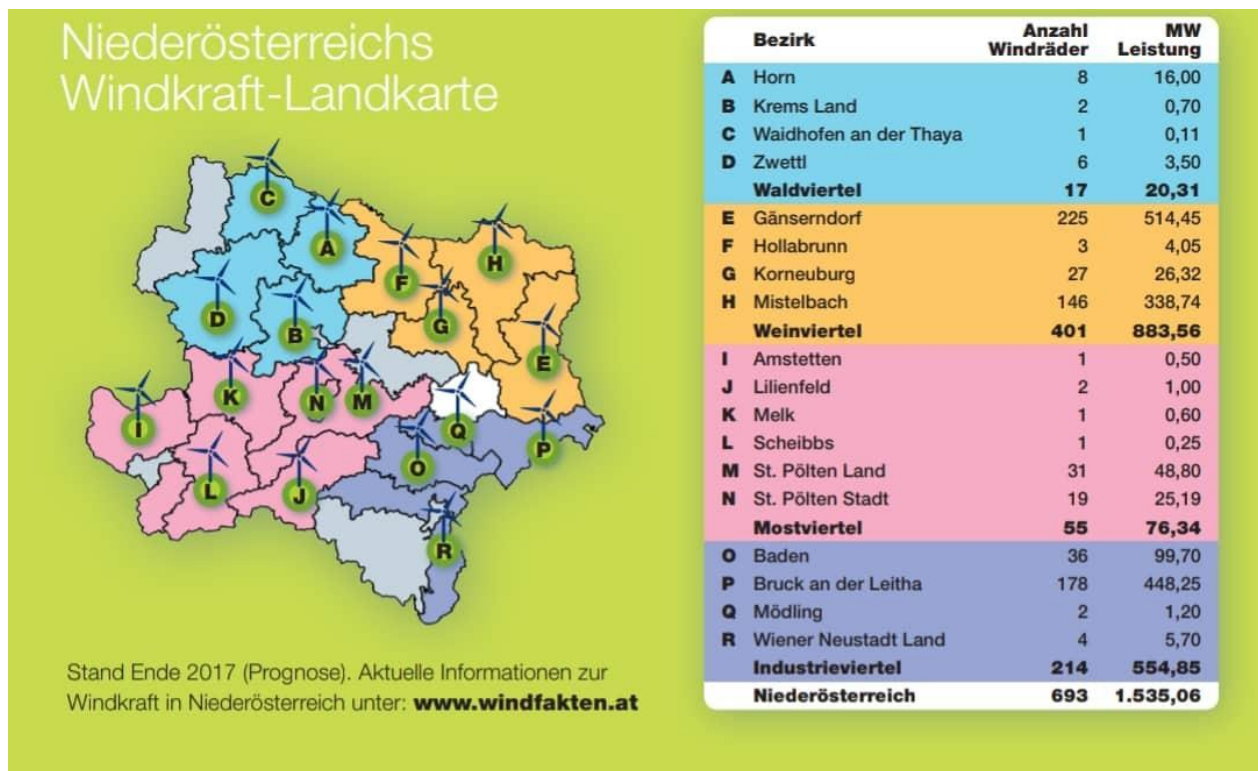
Wind power in Lower Austria

The province of Lower Austria is a pioneer of wind power generation in Austria. As early as 1994, the first wind turbine was installed in Wagram on the Danube. From the beginning, the development of this new power source was actively supported by the population. Nowhere else in Austria are so many people directly involved in wind energy - 60% of all NÖ wind turbines are privately owned. More than 16,000 people have already invested in wind energy in Austria, two thirds of them in Lower Austria. Without this massive public participation, the wind power boom would not have taken this form. Lower Austria also has wind farm operators with the largest number of private shareholders: Waldviertler WEB Windenergie AG with around 3,700 shareholders and Windkraft

Simonsfeld AG with around 1,800 shareholders. The eco-energy Wolkersdorf and the state energy supplier EVN also offer citizen participation. (www.windfakten.at)

Lower Austria has set an expansion scenario of 1,200 MW in the "Lower Energy Roadmap 2030" by 2015, 1,900 MW by 2020 and 3,200 MW by 2050. The share of renewable energy sources in the total energy demand is to be increased by 2020 from the current 30% (2009) to 50% and by 2050 to 100%. With the 20th amendment of the NÖ Spatial Planning Act 1976, LGBL. In order to implement the objectives set out in the Energy Roadmap 2030, 8000/26, a Sectoral Spatial Planning Program has been envisaged to set up zones on which wind turbines may be constructed. The regional planning program was decreed on 20.05.2014 and contains 68 suitable areas. The country is currently assuming that the planned land will be sufficient to meet the 2020 and 2030 targets. However, the actual developability of these areas depends on the consent of the communities concerned. Current figures on projects already approved and planned by the authorities indicate that the scenario for 2015 will exceed 1,200 MW and that the 2020 target of 1,900 MW set by 2020 is very likely to be achieved. However, it seems questionable whether the target of 3,200 MW for the year 2030 can be achieved on the basis of the zoning plan prescribed. (*DAS REALISIERBARE WINDPOTENTIAL ÖSTERREICHS FÜR 2020 UND 2030----- Friedburg, 02.06.2014*)

Abb. 4: Lower Austria wind power map



(www.windfakten.at)

Wind power potential in Lower Austria

As early as 2011, the Lower Austrian state parliament approved the "Lower Energy Roadmap 2030". It states: "Our country is largely blessed with excellent wind conditions. With no other technology, it will be possible to increase power generation to such a high degree and at such a low cost over the next few years. The country will use this resource with high priority and support the expansion with all available means. "Achieving the objectives of the Lower Energy Roadmap 2030 The Energy Roadmap plans to more than double wind power capacity to 3,200 MW by 2030. At present, 1.5% of the country's land is designated as being suitable for wind farms. However, in order to achieve the goal of the Energy Roadmap, it will be necessary to provide additional areas for wind power expansion beyond the current zoning plan. (www.windfakten.at)

At the end of 2015, 100% of the electricity consumed in the state of Lower Austria could be supplied by renewable energies, with wind power contributing more than a quarter. However, in order to achieve the full energy transition, the electricity sector must also provide the energy for electromobility and for the proportionate supply by means of heat pumps. For this, we continue to require an ambitious expansion of all renewable energies and especially of wind energy. Each year, Austria has to import more electricity to meet rising consumption, spending more than € 300 million annually. This import stream comes for the most part from German and Czech coal and nuclear power plants and causes around 3.5 million tonnes of CO₂ emissions, which seriously worsens Austria's CO₂ footprint. The more clean electricity is generated in Austria, the less dirty electricity we have to import. (www.windfakten.at)

Wind power in Styria

When the Tauernwindpark Oberzeiring was built in 2002, it was at that time the highest wind park in Europe. With the completion of the wind farm Steinriegel in Rossegers Waldheimat completed in 2014, Europe's largest alpine wind farm in Styria is now also located. Both are typical locations for Styria, as most Styrian wind farms are located at over 1,400 meters above sea level and in the Alpine Convention area. In 2013, the Styrian provincial government adopted a new wind energy program. This created further opportunities for wind power expansion in the green market. By 2020, just under 330 MW of wind power could provide clean electricity. After Lower Austria, Styria has the second largest wind energy potential. (www.windfakten.at)

Abb. 5: Styria wind power map



(www.windfakten.at)

Over the years, Austria has developed into a strong business sector in which domestic companies operate as technology suppliers or service providers to the global wind power industry. Some of these companies are even world market leaders in their field. For almost every component of a wind power plant, there are manufacturers in Austria. The export rate of this growing industrial sector is around 70%. Strong wind power cluster originated in Styria In Weiz, Styria, an electrical engineering cluster has formed, from which exports go all over the world. The Siemens transformer plant there is the exclusive supplier of transformers for onshore and offshore wind power projects worldwide. The entire value chain includes many more companies throughout Austria. As one of the leading manufacturers of generators for wind turbines, the Styrian ELIN Motoren GmbH supplies the world market. At the Weiz plant, system tests (motor, generator, inverter) up to 6 MW can be carried out at the highest level. An absolutely innovative sensor technology for ice measurement has been developed by the Graz company eologix. Also based in Graz is Uptime Engineering. The company specializes in optimizing system reliability and offers complete wind farm management software. (www.windfakten.at)

Wind power potential in Styria

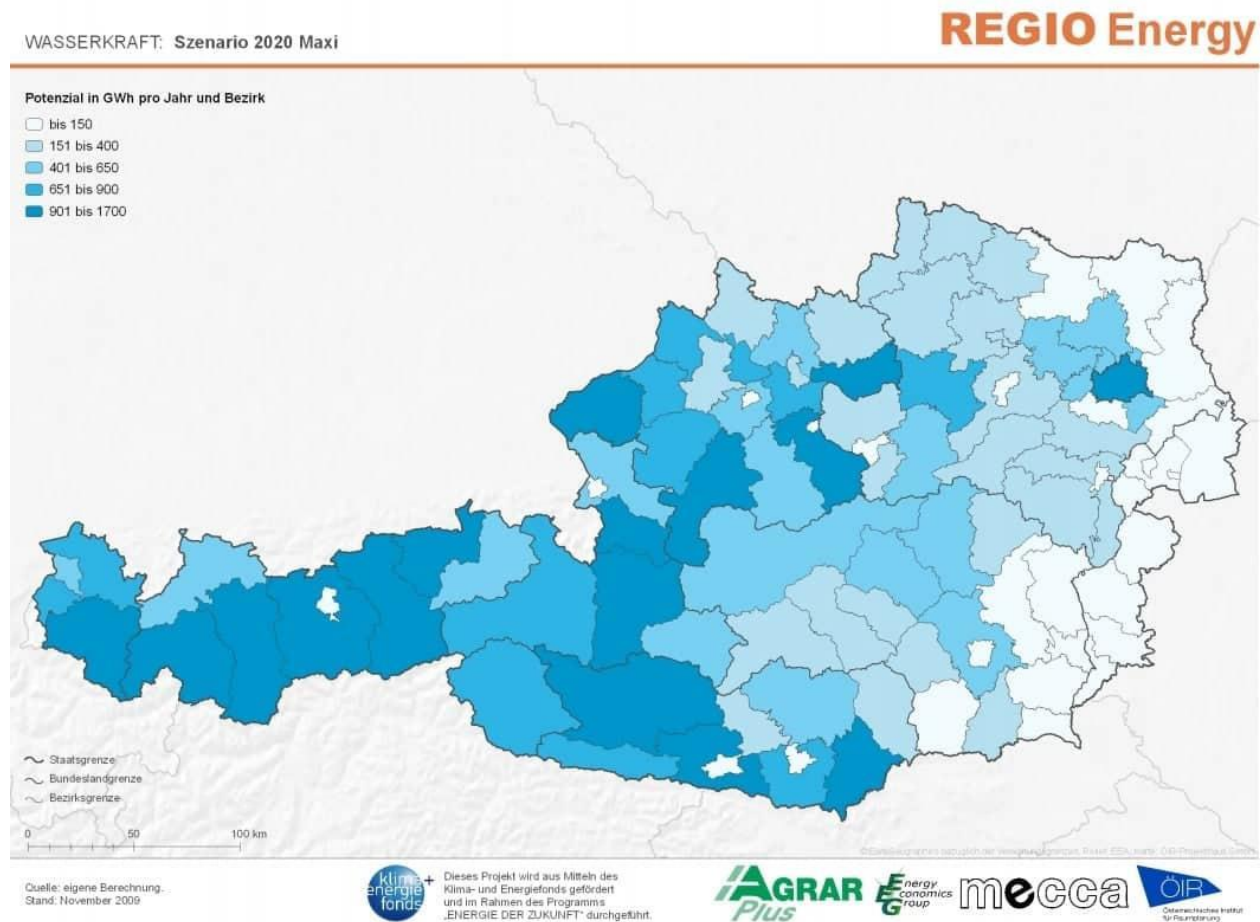
Styria has a considerable wind power potential. At the beginning of 2017, 81 wind turbines with a capacity of around 167.6 MW will supply 20% of Styrian households with electricity. The realistic goal until 2020 is to build around 70 additional wind turbines. In total, around 33% of households could be supplied. By 2030, another 100 wind turbines would then be possible, which could ultimately supply about two-thirds of all Styrian households with wind power. In total, wind power would then cover 11% of the total Styrian electricity demand. (*www.windfakten.at*)

The 2013 "Wind Energy Program" has clearly defined areas on which wind farms can be built. Wind power projects are already in place or in planning on all feasible areas. It is therefore urgent and sensible to start thinking about the amendment of the technical program and to develop an appropriate implementation strategy at the state level for the further development of Styrian wind energy. (*www.windfakten.at*)

The share of electricity from renewable energies of only 42.8% in Styria is the lowest in value of a federal state after Vienna and is far below the total Austrian share of almost 70%. Styrian electricity consumption has increased by 15% in the last 15 years, during the same period electricity imports to Styria had to be increased by 182%. With the "wind energy program", the proportion of electricity from renewables is increasing again, but now new areas for wind farms must be defined in order to create the energy transition. (*www.windfakten.at*)

Hydropower in Austria

Abb. 6: Hydropower in Austria-Scenario 2020



Source: ÖIR- Österreichisches Institut für Raumplanung

Burgenland

The Burgenland economy benefits from the numerous advantages of hydropower. This not only secures the energy supply of the domestic economy and the population, but also guarantees high domestic value added effects with positive effects on regional employment (turbine construction, construction industry, ancillary construction, etc.). Last but not least, many small hydropower plants are popular destinations, making them an important factor in regional tourism. (KLEINWASSERKRAFT ÖSTERREICH [HTTPS://WWW.KLEINWASSERKRAFT.AT/BUNDESLAENDER/BURGENLAND/](https://www.kleinwasserkraft.at/bundeslaender/burgenland/))

Due to its relief and the mostly flat landscape, water power is not possible in a large scale at the Burgenland. Anyway, as the table below shows, the growth dynamic especially from 2008 is strong. 6000 MWh can “feed” the electricity end use consumption of about 1500 households, if calculated with 4000 kWh per household and year. The “IG Kleinwasserkraft” estimates that currently in the Burgenland there are about 22 single small water power plants, each of them with a capacity below 10 MW. (COMPARATIVE STUDY OF BURGENLAND AND TTSK ENERGY SAFETY,2009)

Tab.1: Water power production, Burgenland 2005-2009

	2005	2006	2007	2008	2009
TJ	2,1	2,6	1,7	1,5	22
MWh	576	725,9	470,3	408,3	6119,1

Source:COMPARATIVE STUDY OF BURGENLAND AND TTSK ENERGY SAFETY,2009

As mentioned already, water power is not a major energy carrier at the Burgenland. The current production of electricity in 2009 is 22 TJ (6,1 GWh) but there are other sources that claim it may be much more. With future potentials, the respective studies also vary on a very boras scale. Considering the strength and number of Burgenland Rivers, is can be estimated that the entire potential is already active by 80% or more, especially because it is rather hard to fulfill environmental obligation (although they're with good cause!) with additional construction licences. For more, further studies and decent potential analysis data is yet missing to have more on precise hydro energy calculations. (COMPARATIVE STUDY OF BURGENLAND AND TTSK ENERGY SAFETY,2009)

The goal is to extend the successful model to the entire district by 2010. Finally, by 2013, the federal state as a whole is to be supplied with domestic renewable energy. Clean energy sources such as small hydropower, wind energy, biomass and photovoltaics increase supply and crisis security, create regional jobs and are the key to climate protection. (Kleinwasserkraft Österreich-
<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

Lower Austria

Austria's largest federal state is one of the pioneers of electricity production from hydropower. As early as 1898, the first three-phase power plant of the monarchy went into operation on the Kamp in Zwettl. Lower Austria is regarded as a significant "energy reservoir" of Austria: it supplies almost one third of the electricity generated in Austria. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

The most important producer of electricity is the Danube, which, as Austria's largest river, has the highest hydropower potential. In Lower Austria, the use of small hydropower has a long tradition. This is due to the fact that the size of most rivers - with the exception

of the Danube and Kamp upper reaches - practically only allows the construction of small hydropower plants. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

The Lower Austrian Provincial Government has been promoting the development of hydropower for years, always making sure that the use of water resources is in harmony with nature. The declared goal is the revitalization of decommissioned plants as well as the modernization, automation and performance optimization of existing small hydropower plants. Extensive ecological accompanying measures such as fish migration aids guarantee optimal integration into the ecosystem. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

Lower Austria's economy benefits from the numerous advantages of hydropower. This not only secures the energy supply of the domestic economy and the population, but also guarantees high domestic value added effects with positive effects on regional employment (turbine construction, construction industry, ancillary construction, etc.). Last but not least, many small hydropower plants are popular destinations, making them an important factor in regional tourism. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

Styria

The second largest federal state of Austria presents itself as a dynamically growing economic area with many global corporations and as an international technology location with high innovation potential. Institutions such as the Graz University of Technology or the research company Joanneum Research characterize Styria as the number one research country in Austria. For a long time, the "Green Mark" has focused on generating energy through hydropower. Many pioneers of early energy production have their roots in Styria. A famous example is Viktor Kaplan, whose research interest was primarily in the water turbines and the energetic use of hydropower. His "Kaplan turbine" is in use worldwide today. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

For years, the Styrian provincial government has been promoting the continuous expansion of renewable energy sources. With the "Climate and Energy Strategy 2030" Styria wants to cover 40% of its energy needs from domestic, renewable sources by 2030. The state government and power plant operators attach great importance to ensuring that the use of water resources is in harmony with nature. The aim is the revitalization of decommissioned plants, the modernization and performance optimization of existing small hydropower plants and the construction of new facilities within the framework of ecological sustainability. (Kleinwasserkraft Österreich-<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

The Styrian economy benefits from the numerous advantages of hydropower. This not only secures the energy supply of the domestic economy and the population, but also guarantees high domestic value added effects with positive effects on regional

employment (turbine construction, construction industry, ancillary construction, etc.). Last but not least, many small hydropower plants are popular destinations, making them an important factor in regional tourism. (Kleinwasserkraft Österreich-
<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

Vienna

When the drinking water power plants along the Vienna high-water pipes went into operation, a now ubiquitous buzzword was turned into reality: resource conservation. These plants are a perfect example of how the same source of raw material can be used to benefit twice from one another. Vienna's economy benefits from the numerous advantages of hydropower. This not only secures the energy supply of the domestic economy and the population, but also guarantees high domestic value added effects with positive effects on regional employment (turbine construction, construction industry, ancillary construction, etc.). Last but not least, many small hydropower plants are popular destinations, making them an important factor in regional tourism. (Kleinwasserkraft Österreich-
<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

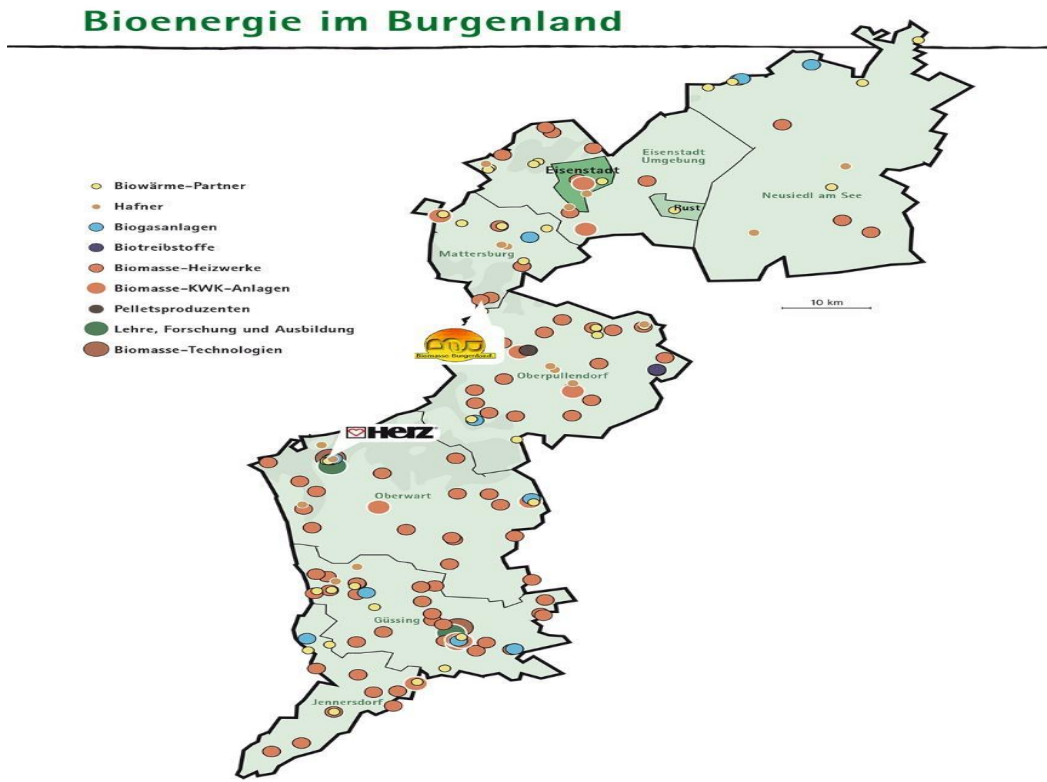
The most important plant is the small hydropower plant Nußdorf, which started operation in 2005. Especially is the location of the small hydropower plant Nußdorf. It is located below the heritage-protected Schemerlbrücke of the famous Jugendstil architect Otto Wagner. The power plant is owned by one-third of Wien Energie Wienstrom, VERBUND Hydro Power GmbH (VHP) and EVN Naturkraft. (Kleinwasserkraft Österreich-
<https://www.kleinwasserkraft.at/bundeslaender/burgenland/>)

Biomass in Austria

Burgenland

While Austria accounts for two-thirds of fossil energy sources, Burgenland has already reversed the trend towards renewable energies. 49.7% of final energy consumption is already generated from renewable energies, only Carinthia has an even higher rate of 53%. Even across the EU, apart from Sweden, there is no state with such a high share of renewable energies. Bioenergy and wind power are Burgenland's two most important tools in the fight against climate change. Biomass covers 29% of gross domestic energy, wind power 19%. Without these two sources of energy, the share of renewable energies in Burgenland would be just 2.5%. The consumption of bioenergy has tripled since 2004. Among the biogenic fuels dominate by-products from forestry and sawing industry, such as wood chips, with 46% as the most important assortment before firewood (34%). Biogas and biofuels also play an important role with 9% each. (www.biomasseverband.at)

Abb.7: Bioenergie in Burgenland



(www.biomasverband.at)

Biomass predominantly dominates the space heating sector. Heating with firewood has a long tradition in Burgenland. More than 38,000 households - almost a third - heat with wood fuels. That's about 5,000 households more than twelve years ago. Over the same period, the share of oil heaters has fallen from 27,000 to 18,000 households, but in the last two years oil boilers have increased again. The share of chipwood, wood chips or pellets in space heating consumption is 50% - this is the highest value in Austria. In 2016, 80 biomass heating plants and 11 biomass combined heat and power plants generated more than 350 million kWh of district heating, covering the needs of around 24,000 single-family homes. In Burgenland, district heating is generated to 99% biogenic, the rest share natural gas and ambient heat. With a share of 99% of renewable district heating, Burgenland ranks first among all provinces and more than doubles the national average of 46%. (www.biomasverband.at)

The fact that Burgenland has been completely self-sufficient in terms of electricity consumption for years is above all due to wind power, which provides 82% of electricity production. In wind energy, Burgenland is a European pioneer. At the end of 2016, 422 plants with a capacity of 1,020 MW were installed in Burgenland. Geographically, Burgenland is particularly well-suited for wind power use - especially the windy Parndorfer Platte in Neusiedl am See, where 92% of Burgenland's wind turbines are located. The biomass contributes 12.5% to electricity production (10% from wood waste and 2.4% from biogas). Alone in the biomass model city of Güssing are three of the eleven wood-fired power plants. 43% of energy consumption in Burgenland is still covered by oil. This applies above all to the fuels sector, which accounts for more than half of the federal state's greenhouse gas emissions. Increasing road traffic and fuel export has led to emissions rising by 70% since 1990. In the building sector, which accounts for 13% of greenhouse gas emissions, they fell by around 50% between 1990 and 2015 due to milder heating periods and the increased replacement of heating oil with renewable energy sources. (www.biomasseverband.at)

Burgenland is the state with the lowest greenhouse gas emissions in Austria. Per capita emissions of 5.9 tonnes of CO₂ equivalent in 2015 were well below the Austrian average of 9.1 tonnes. The main reason for the overall low emission of greenhouse gas emissions from Burgenland is the economic structure with comparatively low industrial emissions. (www.biomasseverband.at)

Regarding its energy strategy 2020, Burgenland is in good shape: the goal of autonomy in electricity has been achieved every year since 2013. It is also well-placed for the "50% plus the total energy consumption from renewable sources" target, with a share of 49.7% in 2016. With the potential of biomass and electricity from wind power and photovoltaic plants, the state is convinced that it will be able to achieve full energy self-sufficiency by 2050. Up to that point, one would like to double the power generation from wind and photovoltaic power in order to cover above all the increased electricity demand for mobility. With regard to the resources of agriculture and forestry, Burgenland is also planning a process of despair by 2050 in the production of biogenic fuels. Woodchips, biogas, biodiesel or vegetable oil should be used to replace fossil fuels. (www.biomasseverband.at)

Güssing

Since the 1990s Güssing has evolved into a trend-setting energy region through a comprehensive energy-efficiency programme (thermal insulation, use of LEDs) and the broad implementation of renewable energy sources (e. g. district heating and photovoltaics) to generate heat and electricity, also attracting great attention internationally as a leading environmentally friendly region with its more than 30 demonstration facilities. (Bundesministerium für Verkehr, Innovation und Technologie)

One of the reasons for success is the close links and cooperation between industry, equipment suppliers and research institutions. After the founding of the European Center for Renewable Energy (EEE) in 2002, Güssing became a research location with a European reputation. In 2009 the research center “Technikum” with a focus on biomass gasification and synthetic fuels was opened as part of the COMET programme. The Technikum in Güssing is one of several locations for the “Bioenergy 2020+” competence centre, where, amongst others, the Vienna University of Technology, Graz University of Technology and Joanneum Research are involved. (Bundesministerium für Verkehr, Innovation und Technologie)

A model for renewable energy policy Güssing is a model for the forward-looking renewable energy policy at local level that is driving the economic development of the whole region. Using wood from local forests in its biomass heating plant, the town produces more electricity than it consumes and is able to provide power for the entire region. Over 50 companies and 1.000 jobs have been created in in the renewable energy sector alone and, since 1995, Güssing has reduced its carbon dioxide emissions by 93%.(Bundesministerium für Verkehr, Innovation und Technologie)

The new technologies tested in Güssing form the basis for future energy supply hubs which meet all needs regarding heat, electricity and fuels from resources available in the region, without competing with the food industry for materials. Research and Development create added value and help to protect the environment. (Bundesministerium für Verkehr, Innovation und Technologie)

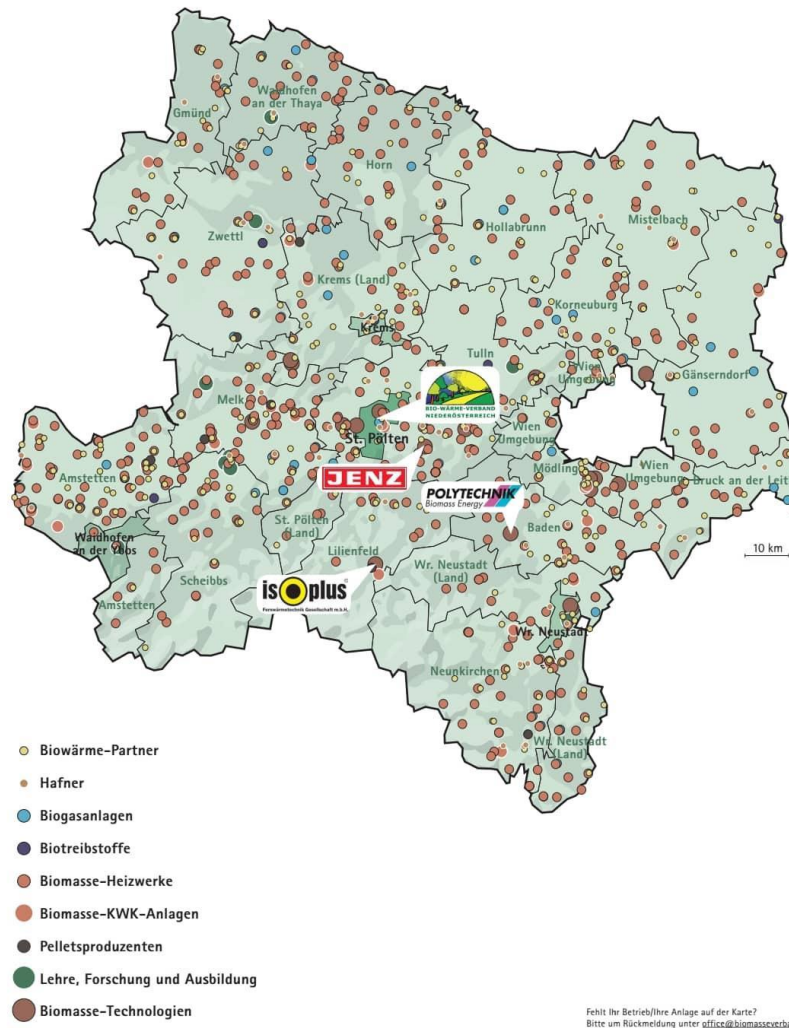
Lower Austria

In terms of area, Lower Austria is the largest federal province in Austria and, in terms of population, with almost 1.7 million inhabitants, comes second behind Vienna. The main economic sectors are the production of iron and metal goods, the chemical industry and oil processing. Mechanical engineering, agriculture and the food industry are other important economic sectors. With 880,000 hectares, Lower Austria has more than a third of Austria's agricultural area. Within Lower Austria, this is almost 46% of the country's territory. (*biomasseverband.at*)

With a forest share of 40%, Lower Austria is below the federal average. The proportion of hardwood of 37% is significantly higher than in the whole of Austria. Renewable under federal section Lower Austria has with 365 PJ the highest gross domestic consumption (BIV) in Austria and consumes over a quarter of the energy of the republic. Since 1988, the BIV of Lower Austria has increased by 59%. Only in 2010 was energy consumption so far higher than in 2016 at 372 PJ. Lower Austria accounts for 27% of renewable energy sources in the BIV below the national average of 30% and has the third lowest value after Vienna and Upper Austria. By contrast, the federal state achieved 34.3% of gross final energy consumption in accordance with the EU directive, which is above the Austrian average. (*biomasseverband.at*)

Abb.8: Bioenergy in Lower Austria

Bioenergie in Niederösterreich



(biomasseverband.at)

Largest oil content in Austria At 50%, oil in Lower Austria is the largest contributor to the BIV among all federal states. In absolute terms, 184 PJ are the highest value for oil consumption, which amounts to 519 PJ in Austria. Lower Austria can supply 16% of its own oil production. 86% of the generated in Austria Petroleum comes from Lower Austria. For natural gas, the state has a self-sufficiency rate of 46% on a unique selling point, because with the exception of Upper Austria and Salzburg, all other countries are 100% dependent on natural gas imports. With regard to the generation of renewable energies, the added value remains completely in the country. Overall, low-energy energy reaches

47% self-sufficiency, the third highest among countries. Second-highest district heating volume Just behind Vienna, with more than 20 PJ, Lower Austria generates the most district heat in the republic. The doubling of district heating production since 2005 is due to the expansion of biomass heating plants and cogeneration plants. (*biomasseverband.at*)

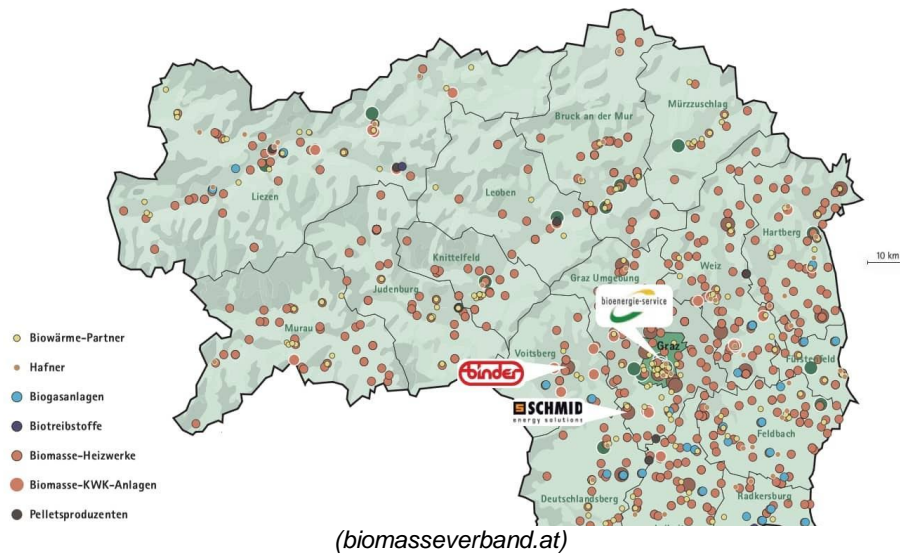
A share of 67% of renewable district heating is ranked fourth in the federal states comparison. In Lower Austria, there are 636 biomass heating plants that produce 7.3 PJ of heat per year. In addition, 29 biomass CHP plants control around 4.1 PJ district heating at. (*biomasseverband.at*)

Renewables without bioenergy only at 11% The share of bioenergy among renewables is 59%, which is the fourth highest value among all federal states. Without bioenergy, the contribution of renewable energies to the BIV would be just 11% and would even have fallen since 1988. Between the years 1988 and 2016, the BIV has bioenergy from 20 PJ to 57 PJ almost tripled. In absolute terms, this is the highest biomass use in Austria. While firewood consumption has declined somewhat over time, the use of biogenic fuels has multiplied (from 1.8 PJ to 41.5 PJ). The most important product ranges are wood chips and sawmill by-products (41%), followed by firewood (24%), biofuels (9.1%) and biogas (9%). Renewable space heating on the rise The share of biomass in space heat generation amounts to 43.2% thus above the federal section. Behind wood fuels, natural gas (30.2%) and oil (16.6%) are the households' most popular sources of energy. The use of oil has dropped by 40% in the last twelve years. At the same time, the number of oil-heating households fell from 140,000 to 92,000. 178,000 households are heating with energy wood. The largest increase since 2003/04 was in district heating (from 35,000 to 91,000 households) and solar thermal / heat pump (from 7,000 to 75,000 households). However, most households in Lower Austria (234,000) are still heating with natural gas. (*biomasseverband.at*)

Styria

Styria is also called the "Green Heart of Austria". This is because more than 61% of its area is forested and another quarter of meadows, pastures and fruit and vineyards is taken. The strongest proportion of forests in all federal states is based on a strong sawmill and wood industry as well as a major pulp and paper industry. The number of biomass heating plants is in Styria with 590 pieces by far the highest in Austria. Also, the amount of pellets produced from the sawmills abundant chips is with 243,000 tons nationwide the largest. In addition to the forestry and timber industry, the Styrian industry is heavily influenced by mining and heavy industry. (www.biomasseverband.at)

Abb.9: Bioenergy in Styria



The "Green Mark" is the second largest in terms of area and the fourth largest in Austria. Due to the numerous colleges, university facilities and research centers located in Graz - not least in the field of biomass - Styria attracts young people for education and further education as well as one of the most outstanding science centers in Austria. In the episode stands out Styria as a dynamically growing economic area with many global corporations and as an international technology location with high innovation potential. Gross domestic consumption (BIV) Energy in Styria increased by 45% between 1988 and 2005 to 233 PJ. Thereafter, consumption has declined somewhat and has stabilized at around 220 PJ. Styria has the third highest energy consumption in Austria. (www.biomasseverband.at)

The share of renewable energies in the BIV in Styria is 29.5%, just below the Austrian average of 29.9%. Styria is 65% dependent on fossil fuels, plus 5% electricity imports. Since oil, natural gas and coal are fully imported, the import dependency of energy is a quota 71% overall very high. This means that Styria is most dependent on energy imports to Vienna. Despite the record number of biomass heating plants, Styria's share of renewables in district heating production is only slightly above the national average at around 48%. In no other state is there such a high contribution of coal (27%) to district heating production? In addition, there are 23% district heating based on natural gas. (www.biomasseverband.at)

BIV bioenergy has more than doubled since 1988, reaching a record high of 45.3 PJ in 2016. This means that Styria has the third highest use of bioenergy in Austria. Of the renewable energy sources, biomass holds the lion's share at 69%. This is the highest value among all federal states and significantly more than the federal average of 57%. Without biomass, Styria would remain renewable Energies at only 9%. Thanks to the strong wood and paper industry Waste liquors (27%) and wood waste (26%) are the most

important biogenic assortments. Firewood is also very popular with 24%, it is used almost exclusively by private households for space heating. (www.biomasseverband.at)

Solution approach: RE-Cross

In the following is a description of our solution approach.

Concept Idea

RE-Cross stands for renewable energies our cross border region of Austria and Hungary. The renewable energies are as diverse as our region. Variety of experts build a regional cluster, benefitting from mutual exchange. Keyword of *RE-Cross* is networking, as our solution approach is a cross border platform for corporations to pool the local potential. The border region of Austria and Hungary profits from its diversity. Differences gather knowledge. To make use of the full potential a concurrence of involved actors is needed and *RE-Cross* will provide place for it. Our platform brings people together. Not only people from the two different countries, but also people from different approaches. Target group for our concept is very diverse, but united by the drive to succeed with renewable energies. Public, government, institutions and enterprises will come together via *RE-Cross* to become stronger with their power of the crowd. The members resources differ a lot. While some can give input to the community with their knowledge, others have time, can provide locations or capital. Bounties are as various as the communities people. Together they can pool resources, infrastructure and information.

Foundation for this network is a online hub. The online platform brings people easily together, no matter how far they are apart. Experts of a specific field, but different areas of the region for example, can get together with the platform and exchange their new approaches. The specific structure and setup of the platform will be explained in the following. Overall the homepage of *RE-Cross* gives information to the public and options for exchange of members. The online tools of *recross* are just its foundation. It is supposed to be the tool to build up the renewable reality. Online exchange of members will lead to real life events for the community to realize their ideas within the region.

The logo of *Re-Cross* visualizes the four subsectors: Wind power, biomass, hydro- and



solar power. In the center of the logo are the three land-based power providers and they are framed symbolically in yellow, referring to reality where the sun covers us all, not only in the cross border region, but on our home - planet earth. The assembly of the land-based energies form a slightly smiling face. This stands for the mindset of our community: optimistic desire to fight global warming locally.

Abb.10:Logo RE-Cross

Platform Setup

The opening screen of the *RE-Cross* homepage gives the user different options to access the platform. Depending on the users position the view differs from others. Therefore we will provide different entering options as *Investor*, *Provider*, *Guest* and maybe some more options or more subdivided groups of providers and investors. Once the user accessed the platform with her or his profile or with the guest access possibility, the news page will appear. We developed a dummy for the platform, which can be seen in the picture below.

Abb.11: *RE-Cross* Homepage Model



The platform's model is structured with two main menus. First of all the centered bar offers the general field of *About us*, where users can find information about the project of the platform and the people behind it. The next field *News*, leads to an overview of ongoing projects and any other news influencing the *RE-Cross* Community. Such news could be political changes, local environmental reports or directly connected stories of *RE-Cross* as our made up example of a local Communication Conference or updates from specific construction sites. General information about the areas of the communities are given on another page. The button *Areas* leads users of the platform to an overview of the participating border regions. It is visualized with an interactive map to provide various information of local and regional specialities. Impressions of all kind of aspects are given.

All economic, social, structural and ecological aspects which are somehow influencing the region's energy sector are covered. As an example the already existing power plants are displayed with symbols fitting to their category and size according to the plants real dimensions. Also the left potential of all four kind or renewable energy sources are visualized. A menu on the side gives the user options to blend specific informations in or out. This gives the opportunity to compare for example the existing solar plants with solar potential in two specific regions of the target area to indicate where investments meet more demand. Of course specifically the potential of growth of renewable energies is elevated in this interactive map, however the natural power meets other involved information resources. Surely the economic dimensions are very important for investment projects. Therefore the various numbers of the regions incomes, unemployed rates, human resources of specific fields and other connected aspects are proved for the users.

Last option of the central bar is the field *Contact*. Here the user gets a structured overview of contact persons, visualized with all categories of information and locations, so that users can make sure they directly get to the right counterpart for their concern. The listed contacts have actual profiles which give information about their background and inputs to the *RE-Cross* community. These profiles are not only for contact list, they are directly connected to the platforms *forum*. The given link of contact persons and the forum might leads users to others posts, what could potentially already answer their question and thereby saves time for both concerned parties. In general the *forum* gives people the opportunity to share not only thoughts about experiences and ideas, but also enables people to share documents or other files with other members.

Next to the *forums* field is the button to get to the page of *events*. As mentioned above, things like the made up example of a communication conference could take place. General get togethers might be helpful for the community for team building, but specifically seminars and similar events are supposed to happen to learn from each others knowledge and reach goals in various fields together.

Reason for the outstanding location of the forum and events button are their importance to the platform. *RE-Cross* is supposed to connect people. Online and offline is space for exchange of all members, to grow together and become stronger in the renewable energy sector.

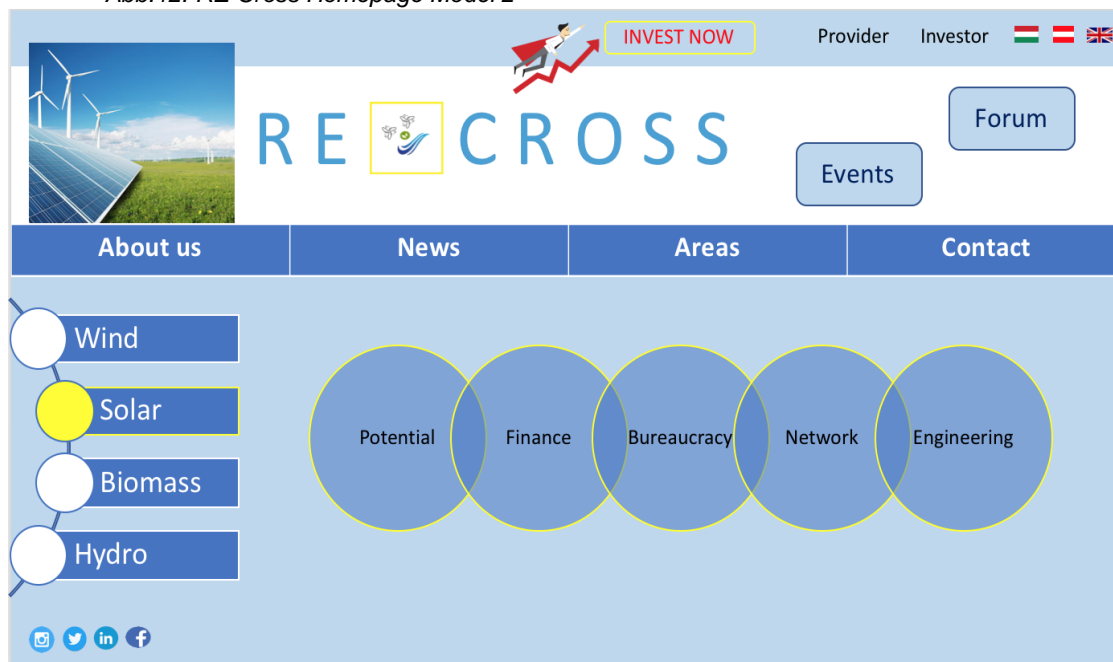
Lefthanded on the website is the second menu seen. It structures the renewable energy sources in the four powers of *Wind, Solar, Biomass and Hydro*. They are ranked by their current usage order. By clicking on the field of solar for example, the user gets to a page looking like the model in the picture below. The different power sources are all connected to the same aspects, but differ in their numbers and restrictions. Important subdivisions the power sources are *Potential, Finance, Bureaucracy, Network* and *Engineering*. This is the heart of the platform, as users can get specific information about the framework conditions specifically for the cross border areas. Elaborated knowledge of the *RE-Cross* community incorporates with further development into the information hub. Providers are able to open projects within the platform. The *Invest Now* button on top of the page, is supposed to be an eye catcher to get investors attention. Clicking on this

button would lead him or her to a list of ongoing or planned projects. With different options the investor can easily pick out the right development proposal fitting to his or her ideal conceptions. Besides the Invest Now button, pop ups and similar tools will be used to catch people's attention about projects with needed investments. Different calculators will be offered to provide an forecast comparison of the different projects.

To exchange all kinds of information communication is key. Therefore the platform is usable in Hungarian, Austrian and English language, the buttons with the flag symbols on the right top corner provides the user an easy option to switch to the preferred language. Integrated translation tools will help to also make the communication work within the *forum*.

Last but not least hints to several social media platforms are given in the left bottom corner. The plugins of *Facebook*, *Instagram*, *Linkedin* and *Twitter* are motivating users to share the platform or specific posts with the general public and thereby generate interest of potential members for the *RE-Cross* community.

Abb. 12: RE-Cross Homepage Model 2



Conclusion

New solution findings like renewable energies bring along positive as well as negative aspects. Wind power plants for example, often cause complaints of the locals, as the visual appearance of the wind turbines is from many seen as a defacement of the scenery. For a person living close to a wind power plant its existence may seem to be just

a disadvantage, completely ignoring the ecological pros for the local and global environment. But by involving the locals financially - even if only with very small percentages - they can get involved and contribute to the plants success. Motivating the neighbourhood is part of the *RE-Cross* concept, as for instance, the locals get the animated to invest a small amount of money, not only to gain financial, but first of all mental support of the public. Renewable energy is part of the solution to fight climate change, however it is not only sustainable in the ecologic way, also financially the investments are more sustainable, as their name already says the renewable energies are inexhaustible. This financial aspect also attracts people and companies with more available capital. Mainly that's why the big hub of Vienna is part of our target area. While the Viennese might have less chances to implement power plants at their location, they can provide investments for other places within the cross border region.

Our target area is full of natural potential. *RE-Cross* supports its use and converts it into economic development by pooling the power of crowds.

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Maps and Figures

Abb.1: Border Region (Regionalmanagement Niederösterreich, Projekt RECOM HU-AT; 2014

Abb.2: Windgeschwindigkeiten in Österreich in 100 m über Boden (www.windatlas.at)

Abb.3: Burgenland wind power map (www.windfakten.at)

Abb.4: Lower Austria wind power map (www.windfakten.at)

Abb.5: Styria wind power map (www.windfakten.at)

Abb.6: Hydropower in Austria-Scenario 2020 (Source:ÖIR- Österreichisches Institut für Raumplanung)

Abb.7: Bioenergie in Burgenland (www.biomasseverband.at)

Abb.8: Bioenergy in Lower Austria www.biomasseverband.at)

Abb.9: Bioenergy in Styria (www.biomasseverband.at)

Abb. 10: Logo RE-Cross (Own figure)

Abb.11: RE-Cross Homepage Model (Own figure)

Abb.12: RE-Cross Homepage Model 2 (Own figure)