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Conflicts and appropriation of spaces by 2030

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Abstract

With the communication highways, information begins, little by little, to escape from the traditional centers of political, military, business or even religious power. In society, which believes that it is gradually freeing itself from these powers, doubts are beginning to settle in, a number of questions arise, a new breed of commentators, YouTubers, interpreters and preachers in all fields appear of social life that try to draw you into their context, their culture or their fashion.

Moreover, the globalization of exchanges, relations, means of "transportation", financial networks and marketing calls into question, implicitly and slyly, the concepts of State, Nation, Community, the very belonging of the 'Individual to a "group", as part of a united Whole. The citizen is becoming more and more an individual connected to his telephone and isolated from the rest.

But with the decrease in resources and the increase in constraints of all kinds, society is wondering about its future, its future, it's very present, the malaise it is going through. She wonders about the modes of governance that are imposed on her, about the many problems she faces daily and the solutions that we cannot offer her. She looks elsewhere and compares, compares herself to other societies and begins to dream, to hope and, very quickly, to express her anger.

The inequalities between North and South, between rich and poor as well as between technologically advanced countries and the others which are struggling to follow, are increasing inexorably and will lead to conflicts, famines and wars of a completely different nature: the war for land arable, the war for increasingly scarce water, the war for influence, the war for space conquest, the war for the appropriation of the seabed and polar lands.

This article is based on the realization of a GIS; it attempts to ask relevant questions for future decades for which certain results lead us to question the relationships, inequalities and influences of each other. He will not answer all these questions; but he will have the advantage of having asked them.

Introduction

In 2050, the world population will exceed 10 billion people. Most of this growth will take place in cities, which will have a direct impact on safety, mobility, energy demand, administrative services, quality of life and of course the environment. Already in 2030, poor countries will become more impoverished and will face many problems of governance, social conflicts, grievances but also suffering. The rich countries will take more and more advances and the gap will widen further.

G.-H. Soutou asserts in his article "What international system(s) in 2030? published in "Foresight and Strategy 2017/1 (Number 8), pages 101 to 114": "We will recall here the two major trends at work since 1914: globalization, but also regionalization, i.e. say the regional groupings (like the EU): in fact, we are not dealing with an opposition, but with a form of dialectic". The author quotes the book by Hervé Coutau-Bégarie 2030, the end of globalization? published in 2008 and observes: "just at the beginning of the most serious crisis of the capitalist economy since 1929, the situation is turned upside down, and it is not enough to "extend the curves" to glimpse the future. Liberal globalization under benevolent American hegemony as Francis Fukuyama announced in 1990 (in his famous article "The End of History?"!) has failed. Not only because of the 2008 crisis, but also because of a growing rejection of liberal globalisation: in 2016, Brexit and the election of Donald Trump also had this significance. (It should be noted, however, that Brexit is ambiguous: opposition to the European Union is also due, among many Britons, to the feeling that the Union is becoming more and more protectionist and less and less able to take advantage of globalization ". The author adds: "On the other hand, Russia, China and many "emerging" countries no longer accept that the international system continues to be led by Washington, which, moreover, since the Clinton presidency, has multiplied the errors on

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the world stage, from the Balkans to the Middle East". Alain Juppé asserts in his article "What state of the world in 2030? published in International and Strategic Review 2010/4 (No. 80), pages 29 to 38: "Today, in a world where the latest wave of globalization has, in a way, abolished space and time, everything exercise in futurology is made even more difficult; it is certainly pretentious, and probably vain to want to describe what our world will be like in 2030". The author adds: "unlike our predecessors who lived through the waves of globalization of the Renaissance or the industrial revolution, we no longer have a new frontier, in the geographical sense of the term, to explore. Climate change is not the only challenge. The scarce resources that fuel our development model are being depleted at an agonizing rate. The question of water resources, which is not unrelated to that of the climate, will be central in 2030: a realistic scenario announces that nearly half of the world's population will live in 2030 in an environment subject to water stress. It should also be noted that the International Energy Agency estimates that global energy demand will increase by 60% between 2002 and 2030.

Oil and gas will continue to provide 60% of global energy production; at the current rate of consumption, the reserves could still last at most 30 or 40 years. Anne Mettler1[1] predicts: "Unrest in the balance of power at the global level, pressure on liberal democracies, challenges to global governance, transformation of economic models and the very structure of societies, new uses and misuses of technology, contrasts between models demographics, humanity's growing ecological footprint: the world is moving towards a new geopolitical, geo-economics and geotechnological order".

According to the latest United Nations projections, the world population could reach around 8.5 billion in 2030 and 9.7 billion in 2050. It is expected to peak at around 10.4 billion people during the 2080s and continue at this level until 2100.

According to the World Bank, the development of agriculture is one of the most powerful levers on which to act to put an end to extreme poverty, to strengthen the sharing of prosperity and to feed the 9.7 billion people who will count planet in 2050 (a). Compared to other sectors, the growth of agriculture has two to four times more effective effects (a) on increasing the income of the poorest populations.

Urbanization and digitization are two key trends shaping the cities of tomorrow. Indeed, Europe wishes to "build back better" and it is at the intersection of these two desires that the opportunities lie. In this respect, Europe is striving to achieve tangible environmental goals by adopting Smart-City technologies and the Internet of Things (IoT), to face the new associated challenges. In emerging countries, sustainable urbanization projects are trying to be implemented despite many sacrifices generated by the chronic lack of both human and financial resources. Poorer countries have other priorities.

We should note, however, that everywhere we are beginning to integrate the fact that the future can only be built on the basis of a new vision of cities and societies, but also on the basis of the equitable sharing of relevant information. It will surely take a long time to get there because the scarcity of resources and the withdrawal into oneself that began to be observed during the covid-19 pandemic have shown all the difficulty of achieving an equitable sharing of resources but also of information often considered strategic. We will witness a division of the world into two categories: i) those who can and who assume the right to have and know and ii) those who can only suffer.

But with the decrease in resources and the increase in constraints of all kinds, societies are questioning their future, their future, their very present and the malaise they are going through. They wonder about the modes of governance imposed on them, about the many problems they face daily and the solutions that we cannot offer them. They look away and compare, and very quickly express their anger.

Concretely, we will have to expect, in the next decades to come, imbalances of power at the global level, increasing pressures on liberal democracies, challenges to global governance, transformations of economic models and of the very structure societies, new uses and misuses of technology, contrasting demographic patterns. The world already seems to be moving towards a new geopolitical, geo-economics and geotechnological order. Some are already predicting the fall and then the definitive exclusion of the euro from the world economy, which will then remain dominated, for some time, by the dollar and the rouble (Russian money).

At the agricultural and forestry levels, forests are increasingly being cleared, particularly in the Amazon; agricultural land is shrinking at the expense of mineralization following the expansion of cities almost everywhere in the world. P. Mouterde2[2] recalls in an article published in the newspaper leMonde on June 3, 2021 "Ecosystems, essential to allow carbon sequestration or ensure food security, have been massively affected by human activities". Urbanization and digitization are two key trends shaping the cities of tomorrow. Indeed, Europe wishes to "build back better" and it is at the intersection of these two desires that the opportunities lie. In this respect, Europe is striving to achieve tangible environmental goals by adopting Smart-City technologies and the Internet of Things (IoT), to face the new associated challenges.

In terms of the use of new technologies, a study published by Dell and the Institute for the Future2 states that 85% of the jobs of 2030 do not yet exist. Artificial intelligence or robotics will not only profoundly transform existing professions but create new ones, the outlines of which are still difficult to draw, such as ethicists or psydesigners. However, some jobs of tomorrow are already a reality. Robotician, data scientists, civilian drone pilot, 3D printer, BIM manager.

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1 Anne Mettler : « TENDANCES MONDIALES À L'HORIZON 2030, choix et défis pour l'Europe https ://www.iss.europa.eu/sites/default/files/EUISSFiles/ESPAS_Report2019_FR.pdf »

2 P. Mouterde : LeMonde newspaper of June 3, 2021

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Figure 1. Hunger and agriculture tables

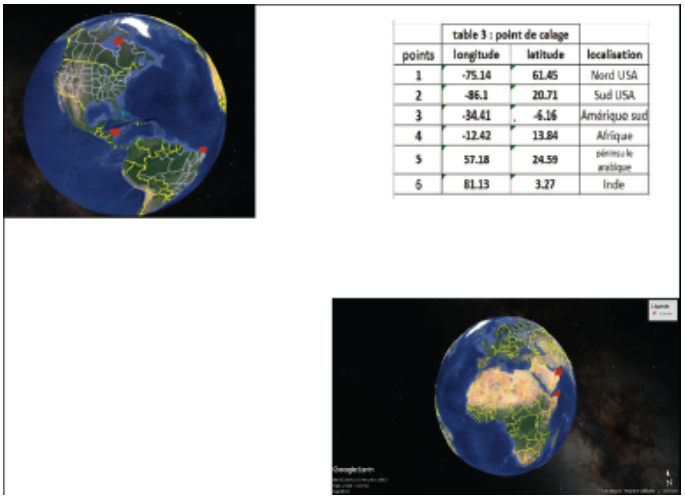

Figure 2. Localisation des points de

In terms of space conquest, the USA, Europe and China are currently in the lead with the establishment of space telescopes, manned space stations or colonization projects on the moon or Mars. Emerging countries, such as India, have space station projects. China, for its part, is currently designing a launcher capable of transporting loads greater than 140 tonnes in space by 2030. A performance that will probably exceed that of all its competitors. The International Space Station, scheduled to shut down in 2015, has been upgraded and reprogrammed to last until 2030; it will then have to crash.

In terms of energy, global demand for 2030 foresees oil as the primary source, followed by gas, then coal; nuclear would come in fifth place and hydrogen in sixth place. The main oil producers estimated in 2030 would be located in the USA, South America, a little in Africa, in the Gulf countries allied with the USA and in Asia, particularly in Russia. Russia is already beginning to spell out its rules for distributing oil to producer-dependent Europe. It is difficult to predict how the Ukrainian conflict will develop and how this dependence will become.

At the level of artificial intelligence, we can note in the report of the seminar "social mutations, technological mutations" reported on the site of France Strategy5 that "The massive collection of data, under the name of big data, the computing capacities multiplied and artificial intelligence techniques are the main drivers of the technological transformation at work. Even if artificial intelligence is still far from the ultimate goal it has set itself to reproduce human intelligence, its progress and its potential have largely transformed society in recent years.

A/ 2030

Method and tools

- **Realization of a GIS:** We consulted many forecast documents which enabled us to develop a geographical database (Geographic Information System, GIS) using the MapInfo software version 8.1 for which we have a license to use.
- Figure (1) highlights the world agriculture and hunger maps. Table 1 shows data from the two main tables: agricultures and areas of extreme hunger (famine). However, we have drawn up all the tables allowing us to analyze the various themes mentioned in the introduction: conflicts, appropriation of spaces, new technologies.
- Preparation of the maps: Table 2 provides the tables produced. We used a blank world map4 and we then used Google Earth pro to calibrate each of the corresponding images. Figure 2 shows the location of benchmarks in the Americas and Africa.

Maps presenting the conflicts, the energy sources, the presumed world influences in 2030 are also elaborated with the MapInfo professional tool version 8.5 from numerous documents on the estimated forecasts for 2030. We also used a blank world map. Table 2 shows the summary of the tables.

Table 3, present in Figure 2 shows the calibration points used for this work

Results

- The first result is worrying; Table 1, already quoted, shows us that famine (extreme hunger) is localized in areas where there is practically no arable land. This means that the countries concerned are subject to the influence of countries producing cereals and other agricultural products.
- The second result is also concerning in the sense that:
  - conflict zones are found in the countries of the South, in other words the most vulnerable.
  - moreover, the exploitation of space and the seabed is under the essential control of the countries of the North, i.e. the rich countries; yet space and seabed are supposed to be heritage of humanity and therefore belong to all States and Nations; the reality is that these areas are occupied by the first to arrive, i.e. those who have the means (financial, human and technological). This is shown in Figure 3.
- The third spectacular result is that given by the map of areas of extreme famine; all the countries concerned are located in Africa. These are often very poor countries and therefore subject to the vagaries of the global resource market. Figure 4 shows us this result.

Social change

In the North as in the South, in the rich countries as in those which try to follow them, societies are changing and we are witnessing a real societal mutation that we accept or that we undergo. Advances in science, beyond the "disturbances" induced by technological advances in societal pathways, lead or will lead, sooner or later, to questions of a new kind, on subjects that are nevertheless old and supposedly known and mastered. (because so much considered obvious and simple to design). We are going to consider in what follows two countries that we like: a country in the North, France

Figure 3. Conflicts and appropriation of spaces

Figure 4. Famine by 2030

and a country in the South, Algeria. These two countries seem to represent two sufficiently representative samples of the North and South areas. It is true that the example of France cannot be applied to the United Kingdom or to the Nordic countries which have other laws, other development strategies and another view of the Other in general and of the communities. In Europe itself, Germany, Spain and Italy also have other concerns and another view of the Other. But the covid-19 pandemic showed us that everyone had the same attitude of the self-first and the other afterwards.

In France

Citizen Lambda's behavior has changed a lot in recent decades. The globalization of exchanges, relations, means of "transportation", financial networks and commercialization calls into question, implicitly and slyly, the concepts of State, Nation, Community, of the very belonging of the Individual to a "group", as part of a united Whole. We have witnessed during the Covid-19 pandemic the strategies of States putting their own interests before others: it will suffice to recall here the cases of masks and vaccines. But the individual, Citizen Lambda, has gradually lost the consideration of the other. It is not uncommon to encounter people chatting quietly in groups and blocking the only path in front of you. It's not uncommon to find someone so focused on their phone that they don't even realize they're blocking you; he sits there chatting for hours oblivious to the inconvenience he is causing to others. It is not uncommon to find people pushing you to get past you in a communal elevator. It is not uncommon to find in your path a person walking his dog and blocking your way with the leash of the dog peeing or rolling on the ground; but maybe that person didn't even see you coming; in any case, she does not even ask herself the question of whether she is blocking the road or whether other people can take this path. It is also not uncommon to be abruptly awakened in your sleep by neighbors talking very loudly at the bottom of your building just near the entrance; they could have gone a little further, there is so much space! Are these people aware that they are disturbing? Admittedly, there are still exceptions and you sometimes find people helping you down, by the stairs of the metro or in front of your building, your stroller or your shopping trolley; but this is an exception!

In Algeria

We will take here the case of the city of Laghouat, a former oasis of the north-south transition, between the High Plateaux and the Sahara which appears to us as a representative and generalizable sample of many behaviors and attitudes of the citizen. Laghouat, as a rapidly expanding urban center, does not escape this analysis. The population that lives there, now connected and turned towards the outside world via television and a social network, more than towards its own context, is increasingly impregnated by other ways of life and other concerns. The parable is everywhere translating the hope, or the dream, to project oneself elsewhere, to find out about

what is happening elsewhere, to follow the series from elsewhere, to aspire to another life of freedom.

The vision of the property of the Other and of the community changes; we appropriate, quite naturally, parts of public spaces; we argue that they are useless and that by taking them, we value them! Where is the respect for the law, where is the consideration of others, where is the control of the competent public services? The fig shows an example that tends to multiply in front of individual houses but also in front of apartment buildings. These habits of the parable to project oneself elsewhere and of the appropriation of the common or public space are found in almost all other Algerian cities.

Another example will shed more light on social change: I had taken a taxi and was talking to the driver about driving, about the incivilities of some people, about respecting road signs and pedestrian crossings; arrived near the university, two young students were crossing a pedestrian crossing; they were almost in the middle of the passage; the driver accelerates to bypass them and pass. I challenge him and remind him that we were talking about pedestrian crossings and incivilities. He replies: "I swear by God that I have not seen them". He swore by God to affirm that he is a believer. So I said to him: Sir, you are either a liar who thereby denies his conviction and his faith; or you are not fit to drive if you really have not seen these two people; in fact, I really think you're a damn liar because you sped up to get around them.

With a magister student, a survey had been carried out on respect for road signs in the city of Laghouat. The results are so shocking:

- Strict compliance is only 24% for the 'stop' signal and 35% for 'give way'; it is 0% for the 'pedestrian crossing'; the culture of pedestrian priority on the use of the road is not yet introduced into the popular consciousness and this is confirmed by our taxi driver.
- The 'give way' signal is not respected
- Even the 'stop' signal which requires marking a mandatory stop is very little respected in this form.

The space race in 2030

The prospect of exploiting the resources offered by the Moon arouses covetousness and could help stimulate innovation and, ultimately, lead to a significant reduction in the cost of spaceflight. A first group comprising six to ten pioneers, including scientists, technicians and engineers, could settle by 2030. In 2040, it could expand to a hundred individuals and it is reasonable to imagine sending a thousand people on site by 2050 to pave the way for lunar colonization.

One can wonder whether the moon has enough resources to support a human colony. On the surface of the Moon, the temperature drops to -170° Celsius during the night, which lasts two weeks. Surviving in such conditions obviously requires a lot of energy. To obtain it, we can store part of the solar radiation during

the day or exploit the gases that are close to the surface. There would also be in the Polar Regions located in the shade more than a billion tons of water, in the form of ice, in the first two meters of the lunar soil. Once filtered to purge harmful residues, this water could meet at least part of the needs of astronauts and it could also be used to propel rockets powered by oxygen or hydrogen. It will probably be necessary to establish "regulations" to avoid the inevitable conflicts. A law such as that established for the terrestrial space, the seabed and other spaces and resources considered as belonging to all, will be inequitable by excluding the nations which would come later than the first.

A few important milestones can be highlighted here:

- 2020: the race for satellite constellations
- 2021: commissioning of the JWST space telescope
- 2021-2022: India's first manned flight
- 2022: China becomes the first space power to land a ship on the far side of the Moon; a Chinese space station should also be put into orbit
- 2023: return of samples from the asteroids visited by NASA's Osiris-Rex
- 2024: Europe will visit an asteroid
- 2026: NASA to attack Titan, Saturn's icy moon; landing is expected for 2034.
- 2029: Europe aims for the moons of Jupiter
- 2030: India wants to launch its station without the help of outside countries
- 2030: Space X hopes to land a probe on the Moon around 2030.

The USA and the space race: The University of Geneva website1 (https://www.unige.ch/campus/numeros/137/invite/); Campus magazine n°137 of June 2019, note: "Half a century after the arrival of Apollo 11 on lunar soil, man is preparing to return there, but this time to settle there permanently. ". On July 21, 1969 at 2:56 GMT, the American spacecraft Apollo 11 deposited Neil Armstrong and Buzz Aldrin on the ground of the Moon, this being the first visit by humans to a non-terrestrial object. If the 20th century had been that of the conquest of the Moon, the 21st century will probably be that of the conquest of Mars: the kick-off should have been given in the summer of 2020 and NASA should send its Mars 2020 rover within of Jezero Crater to search for clues of past life. The United States wants to send a woman there from 2024 and plans to set up a base there in order to make it the "eighth continent".

Europe and the Space Race: Launched in 2003 by the European Space Agency, the Smart-1 mission has largely contributed to reviving interest in the Moon. The general idea was to test a new type of space probe that was smaller and less expensive than those previously available. Smart-1 was first placed in orbit around the Earth before reaching that of the Moon from where it carried out numerous scientific observations. The data thus collected has provided valuable information on the topography, the resources or the differences in luminosity that exist on our natural satellite, where certain regions, including the "eternal light peak", benefit from a sunshine of 100 % during the summer and 80% during the winter. This mission made it possible to acquire expertise that it was possible to share with countries such as the United States, Russia, China, Japan and India. Europe is also interested in setting up a base on Mars.

China and the space race: As part of the "Chang'e" program, China, with which ESA works closely, has launched several probes to the Moon since 2007. The first two have remained in orbit. Chang'e 3 deposited a lander and a rover on its surface and Chang'e 4 resulted in the first moon landing on its far side. The next step, scheduled for the end of this year, is to bring samples back to Earth.

Russia and the Space Race: The priority for future Russian manned space programs for the next 10 to 20 years is lunar exploration. Russia is thus in the process of developing a new generation of spacecraft, and soon, should begin the development of other elements of a lunar program. Russia is also interested in setting up a base on Mars.

India and the space race: In collaboration with the ESA, India sent a first probe into orbit in 2008 and is preparing, after several postponements, to launch a new mission (Chandrayaan-2) which should this time carry out explorations on the ground.

The United Arab Emirates: In February 2021, after a five-month journey from Earth, the United Arab Emirates placed a space probe dubbed Hope in orbit around Mars. After this achievement, the project manager said: "To the people of the United Arab Emirates, Arab and Muslim nations, we announce the successful entry into orbit around Mars. God be praised! ". This "victory" can however be discussed because the country is asserting itself as the first space power in the Arab world. This can be discussed since the probe was made in scientific cooperation with the United States and was launched by a Japanese launcher from a Japanese base. The event, however, shows the willingness of the UAE to enter the space competition and the power of the United Arab Emirates and its ability to project itself into the future.

B/ 2040

According to France culture reported by Nicolas Gastineau, Frédéric Martel and published on Monday May 31, 2021 on the France Culture website1[3]: "The CIA has drawn up a major report on the state of the world in 2040. This document is entitled: " The world in 2040 as seen by the CIA: the best-selling forward-looking American intelligence book. This is a vast forward-looking report on the state of the world in 2040, which analyzes all areas (economic, demographic, environmental, social and political) and draws a contested and under-tension world. The main objective of this report is to is to provide each new American president with a state of the world to come, the risks and the dangers which weigh on the States, their allies and the rest of humanity from a large number of crossed data and a titanic work of crossing these data to obtain a prospective vision of the world.

In fact, every four years, after each presidential election, the National Intelligence Council of the United States publishes an exhaustive report on the "world after": a document to anticipate the next twenty years, official predictions not always cheerful... Most of the report is devoted to what the world will be like in 2040.

US intelligence is considering five scenarios:

1. "A drifting world" based on current trends
2. "Separate silos" to describe a world divided into spheres of influence;
3. "Competitive coexistence" which explains cooperation without major conflict;
4. "Tragedy and Mobilization" which envisions Sino-European partnership, multilateralism and development in the wake of a severe global food disaster;
5. And "renaissance of democracies" which refers to the restoration of a liberal order.

3 N. Gastinau et F. Martel : https://www.radiofrance.fr/france-culture/le-monde-en-2040-vu-par-la-cia-le-best-seller-prospectif-du-renseignement-americain-9130772 ; 31 mai 2021.

C/ 2050

The world population will reach 9.8 billion people in 2050 and will be concentrated in cities. The planet will face growing demographic, economic and climatic challenges that must be addressed without delay to prevent inertia from making the situation irreversible.

According to the latest United Nations estimates, crossing the 10 billion thresholds will depend mainly on developing countries, including Nigeria (now the seventh most populous state in the world; in 2050 it will be the third, ahead of the United States and behind China and India). From 2017 to 2050, half of the world's population growth is expected to be concentrated in just nine countries: India, Nigeria, Democratic Republic of Congo, Pakistan, Ethiopia, United Republic of Tanzania, United States of America, Uganda and Indonesia. The population of developing countries will increase more than that of rich countries. However, the latter should not experience any contraction due to migratory flows. However, immigration will not reverse the trend in certain countries where the birth rate is particularly low: according to the Cnel (National Center for Free Education), Italy is heading towards "a spectacular decline, of 60 million today to 56.5 million in 2050". In 2050, the world population will therefore be older on average than today. 68% of the population will be concentrated in urban areas (compared to 55% today). Rural-to-urban migration will be particularly pronounced in Asia and Africa, including India, China and Nigeria.

PwC's "The World in 2050" report estimated the impact of these changes on the economy by 2050. China and India will have the highest GDP. The United States would fall to third place, ahead of Indonesia. The weight of EU countries in world GDP will be reduced to less than 10%. The surge of emerging countries could result in the countries currently belonging to the G7 giving way. Britain would drop to tenth place. France would come out of the top 10 and Italy from the top 20, also overtaken by Mexico, Turkey and Vietnam. For PwC (PricewaterhouseCoopers: British network of companies specializing in audit assignments), these upheavals pose three major challenges: to avoid giving in to the sirens of protectionism, which would have negative repercussions on long-term global growth; ensure that the potential benefits of globalization are more evenly distributed; developing new green technologies to ensure global growth is environmentally sustainable.

On the Futura Planète1[4] website, we note that: "Certain regions of the world will be too hot to survive by 2050. Scientists consider that the highest wet bulb index that a human can withstand is 35°C for six hours. NASA recordings have already recorded wet bulbs (wet bulb temperature above 35°C) many times since 2005: in the subtropics of Pakistan and the Persian Gulf. Over the past 40 years, the frequency of these extremely high wet bulbs has tripled. Most of the hot and humid regions of the planet have a wet bulb index which generally does not exceed 25 to 27°C".

NASA's climate forecasting models are trying to determine countries where the wet bulb index will soon be too high to survive. This will be the case for southern Asia, the Persian Gulf (Iran, Oman, Kuwait), and countries bordering the Red Sea (Egypt, Saudi Arabia, Sudan, Ethiopia, Somalia, Yemen) from 2050. Eastern China, parts of South Asia and Brazil are also expected to regularly exceed a wet bulb index of 35°C by 2070. NASA predicts the same fate for some Midwestern US states within 50 years, such as Arkansas, Missouri and Iowa. The following map produced on MapInfo 8.5 gives us a general idea of the uninhabitable zones in 2050. The habitable zones would be concentrated in Canada and extreme northern regions where the warmer temperature would become conducive to agriculture; a migration of European populations to these areas could be envisaged.

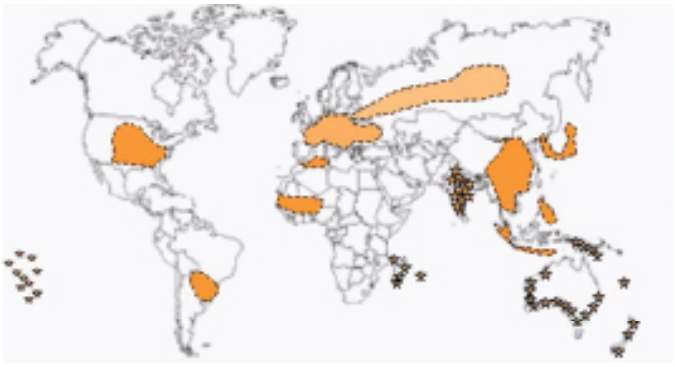

Figure 5. Potentially habitable areas

The other part of potentially habitable areas is in Africa and we should then expect a migration of populations to these areas. Populations in eastern China, South Asia and Brazil would face migratory competition and difficulties in moving to potentially habitable areas (see Figure 5)

Conclusion

To carry out this work, we were mainly concerned with creating a complete geographical database (GIS) more suited to our project. The Google Earth tool was mainly used to calibrate the basic image consisting of a background map of the blank world and specific thematic maps.

The main results show us that:

- The countries of the North, the richest and the most endowed in resources (human, material, financial) are finally those which have the main resources and, above all, which completely legally appropriate the spaces (the sky, the space through space exploration to the moon and Mars, the seabed, the polar zones).
- The countries of the South are becoming more impoverished and bogged down in multiple problems (anger and social demands, conflicts between cross-border workers and others). Pressure from rich and developed countries on countries in the South is already relatively strong and will remain so or increase by 2030. Two recent examples can be cited:
  - US pressure on Morocco: recognition of Western Sahara as belonging to the Kingdom on condition that it normalizes its relations with Israel
  - The pressure of the USA on Australia to denounce the contract for the construction of submarines by France; the contract is awarded in the United Kingdom; but the market cannot ultimately be honored within the scheduled time. Admittedly, Australia has made an economic gesture towards France (reimbursement of a lump sum).
  - Russia, for its part, only authorizes its allies to fly over its airspace by passing directly through the North Pole; the others are forced to make long and costly detours.
- Technological innovations and social changes: From the report of the SEMINAR "Social changes, technological

4 Futura Planète : https://www.futura-sciences.com/planete/actualites/rechauffement-climatique-voici-regions-vont-devenir-inhabitables-2050-selon-nasa-97432/ ; visited by 5 august 2022.

changes" organized with the collaboration of EHESS and INRIA in October 2015 - June 2017 we can extract: "Technological advances and social transformations which result from them or are at their origin arouse enthusiasm and controversy, both in terms of their long-term scope and the degree of risk they contain. Moreover, technological innovations profoundly modify our societies – not without arousing debate or concern – but they can also generate social changes which themselves produce fertile ground for new technological breakthroughs".

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