

Chapter 5

The Colombian Scientific Diaspora in Switzerland

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Executive Summary

The research project “A Swiss Network of Scientific Diasporas to Enforce the Role of Highly Skilled Migrants as Partners in Development” was carried out during 2006 and 2007 with the financial support of the Geneva International Academic Network (GIAN) in an attempt to provide some clues on how to take advantage of the potential of skilled migrants from developing countries who live in industrialized countries in terms of their contributions to the development of their homelands. This project was based on three case studies: Colombia, India and South Africa, from the perspective of one country of destination: Switzerland.

On the basis of this research, this chapter examines the situation of the Colombian scientific diaspora in Switzerland and offers empirical evidence

obtained through in-depth interviews with 27 skilled Colombian migrants. The chapter analyzes the causes and characteristics of skilled Colombian migration to Switzerland, their living and working conditions, their everyday life experiences, as well as their relations with their country of origin and the initiatives they undertake to benefit development in Colombia. The chapter shows original transnational ways through which skilled Colombians can live in the country of destination while maintaining close links with Colombia, and it provides evidence of the obstacles they face and the positive elements that stimulate the impact of “brain gain” mechanisms, social remittances and other transnational practices that benefit the country of origin.

In order of importance, the main factors determining the migration of skilled Colombians to Switzerland are: studies and training; family regrouping/marriage; professional mobility; and socio-economic reasons. One usually finds a mixture of personal agendas and professional perspectives, objectives and training opportunities behind the decision of skilled Colombians to emigrate.

The French-speaking part of Switzerland is the main destination of most Colombian skilled migrants as a consequence of the social networks that have been built up over the past two decades there as well as the social capital derived from these networks. The contacts that Colombians maintain with their fellow nationals back home have helped to strengthen the network effect and this causes other skilled Colombians to also emigrate to Switzerland.

The Colombian case offers proof of how student mobility has put the labour market in the country of destination at the disposal of a group of qualified workers. In this respect, the great majority of Colombians who arrive in Switzerland for study and scientific training reasons enter the labour market after they have finished the training that brought them to Switzerland in the first place. Their most significant push factors are: the limitations in some scientific areas, the lack of resources for research, the shortage of materials and equipment, the small number of research positions and the lack of doctoral programmes in certain disciplines, etc.

Family regrouping/marriage is the second most important factor behind Colombian skilled migration to Switzerland. All Colombian respondents who left their country of origin for family regrouping or marriage reasons or because their partner was a Swiss citizen were women. The evidence shows how family migration due to family regrouping/marriage helps to introduce valuable human resources into the job market and the scientific world in the country of destination. Accordingly, all the skilled Colombians who have come for family reunification familiar/marriage reasons have followed a professional or scientific career in Switzerland. For some Colombians, the most significant factor after their decision to emigrate to Switzerland was the presence of family members in that country, together with their desire to find better profes-

sional and living opportunities. The Colombian case also offers us evidence of the complex mixture of motivations behind migration, the interaction of gender aspects with various migration patterns, which include circular migration, temporary return to the country of origin and permanent residence in the country of destination.

The third most important reason causing skilled Colombian migrants to move to Switzerland is labour mobility. In this case, labour mobility is facilitated above all by the social networks and the social and professional contacts established previously by Colombians, and to a lesser extent it is also facilitated by family contacts in the country of destination.

Finally, socio-economic reasons also play a decisive role in the migratory processes of skilled Colombians. As they search for better professional opportunities, the skilled Colombians are attracted to pull factors such as training opportunities and/or the chance to pursue their careers in an environment of academic and scientific excellence, the high quality of life, the stability, etc. At the same time, additional push factors which stimulate the emigration of Colombians include a lack of opportunities in Colombia and the atmosphere of violence and insecurity.

Scientific exchange as well as scholarships and bilateral cooperation programmes are decisive factors which encourage Colombians to leave their country of origin. A third of the Colombians interviewed had received scholarships to carry out research in Switzerland. Furthermore, many of the Colombians who arrive in Switzerland through scholarship or scientific exchange programmes are offered jobs once they finish their studies or their research and for this reason they have not returned to their country of origin as they had originally planned.

As far as the migratory routes of the Colombians are concerned, we should mention here that the nomadic lifestyle of the scientists causes them to move to different countries and it also explains why they had spent time in other destinations before arriving in Switzerland. Some Colombian scientists returned to Colombia temporarily but then came back to Switzerland, passing through a third country in many cases, often to accept professional development or training opportunities which were better than those offered in their country of origin. In several cases, family and personal factors also influenced the migratory dynamics. The Colombian case shows that, unlike less qualified migrants, skilled migrants can move with greater ease and they have more options to choose from.

The skilled Colombians have varying initial experiences in the country of destination, which are especially related to the factors determining migration. Accordingly, those Colombians who arrived in Switzerland with scholarships or work contracts generally have more positive first experiences than those who emigrated for family regrouping/marriage or socio-economic reasons. Further-

more, the Colombians who rate their initial experiences as positive are those who lived in other countries before arriving in Switzerland and those who started a job immediately after they arrived in the country of residence as well as the few who already knew one of the local languages.

The strong social network that the Colombian diaspora has created over the past decade especially within the environments of the Swiss Federal Institute of Technology in Lausanne (EPFL) and the University of Lausanne (UNIL) is another significant element which contributes to skilled Colombians having positive experiences when they arrive in Switzerland. The Colombians recognize that to a large extent they have been able to establish initial contacts which have facilitated their first experiences, thanks to the Association of Colombian Researchers in Switzerland (the ACIS). For others, their senior work positions in private industry and the multicultural and international environment have certainly been of great help.

In contrast, the initial experiences in Switzerland of those who did not come with the help of a scholarship or a work contract are difficult. Adapting to a new culture, lifestyle, climate, rhythm and intensity of work, the difficulty of making friends and the fact that they are far from their families, the difficulty of obtaining a work permit and in some cases sexual or racial discrimination and the non-recognition of their academic diplomas are the most significant obstacles faced by skilled Colombians. Skilled Colombians recognize that learning the local language is a key step for professional and social integration.

On the other hand, some skilled Colombian women felt discriminated against on their arrival in Switzerland, both socially and professionally. This is something that changed once they learned the language or became integrated in professional life. The Colombian case shows the important difficulties faced by women when they try to transfer their academic and professional resources across borders in order to reach a level of integration suited to the level of their capabilities.

For some skilled Colombians their migrant status has seen them question their personal identity as well as their feeling of belonging, especially if they have had difficult initial experiences after their arrival in Switzerland. The process of identification as individuals and as group members in a different country has carried an emotional burden for skilled Colombians, especially women. For those who did not receive a work permit when they arrived in Switzerland and who previously had professional careers in Colombia or other countries, migration to Switzerland meant a change of status, and specifically the loss of their professional standing. Once the skilled Colombian migrants decide to remain on a definitive basis in the country of residence, generally their desire to integrate increases and this facilitates the feeling of affinity with their new identity.

Skilled Colombian women with small children come up against many major obstacles as they search for a balance between family life and their professional or scientific lives. They disagree with the role that society expects from mothers in Switzerland in the sense that it is assumed that they will stay at home to look after their children. In addition, they believe the Swiss system is not designed for working mothers, but rather and on the contrary, it discourages them from doing both jobs. This is unlike Colombia where the system is designed to allow women to enjoy a family life and a professional life at the same time.

In their free time, skilled Colombians practice sports or outdoor activities, cultural activities, participate in philanthropic activities, and they also meet up with Colombian friends and/or family members or people of other nationalities during the weekends. The skilled Colombians recognize the respect that the work culture grants to free time and family and private life, the flexibility offered by academic life and the possibility to work part-time as major advantages of the Swiss quality of life.

The Colombians create contacts with other national communities, with the local community and with the Colombian community, which strengthens their social capital. While the majority feel a special affinity with Colombians, there are others who would rather not meet their fellow countrymen simply because of their shared nationality or common culture but rather only if they have an affinity of interests.

Professional and institutional contacts as well as social relations are decisive factors for the integration of the skilled Colombians in the country of residence. While many Colombians make use of the social capital that they bring with them when they arrive in Switzerland, others need more time to gain access to new social and cultural resources which are essential for their integration. They do this through their professional activities, study programmes, their knowledge of the language or their active participation in associations.

Most Colombians feel comfortable living in Switzerland and they consider themselves to be well integrated into the social and/or professional life of this country. The existence of a continuous bifocalism or sense of a double framework of reference is a significant element that has been observed among the majority of skilled Colombians in Switzerland, since in their everyday lives they persistently compare their condition in their country of origin (“there”) with their situation in the country of residence (“here”). The transnational feeling is especially strong among those Colombians who have spent a long time outside Colombia as well as among those who have settled down permanently in Switzerland. Likewise, skilled Colombians emphasize their “feelings for Colombia” and show their roots, culture and Colombian identity, regardless of their level of integration in the country of residence.

The Colombian case offers evidence that the identity of the migrants is influenced by their migratory status, the type of residence permit and the type of citizenship they hold. For many skilled Colombians the fact of having a stable residence permit has become a major factor when it comes to deciding whether or not to settle, insofar as it offers them the possibility to think in the medium and long term future. This, in turn, helps to increase their identification with the country of residence and with this, their integration and transnational feeling and identity. The migratory status of the Colombians changes during their residence in the country of origin; a third of the skilled Colombians who participated in this study have become naturalized Swiss while retaining their Colombian nationality.

Skilled Colombians who have dual citizenship feel that this condition stimulates the feeling of integration in Switzerland and it facilitates their entry into the labour market. Accordingly, being a citizen of the country of residence has contributed to skilled Colombian migrants considering themselves full members of the host society.

With regard to the specific practices and initiatives of the skilled Colombians in benefit of their country of origin, the project identified, a priori, three “brain gain” mechanisms which have been shown to have an impact on the development of the countries of origin: the creation of networks and associations of the scientific diaspora; investment strategies for experimental research and development (R&D); and North-South scientific collaborations. The declarations of the Colombians provide proof of their active participation in the creation of the Caldas Network, which has been a paradigmatic example on a global level of an innovative way of taking advantage of the resources of the emigrated abilities. The Swiss node was hosted by the ACIS association. The ACIS is a clear example of an association of the scientific diaspora which has had an impact in the field of science and technology in the country of origin as some of its members have contributed to the creation or reinforcement of a critical mass in key areas such as the environment, medicine or ICT, through scientific collaborations based on individual efforts.

The Colombian case shows the key role played by the networks and associations of the scientific diaspora insofar as they facilitate the implementation of the other two brain gain mechanisms: R&D and North-South scientific collaborations. The implementation of joint research projects between a partner in Switzerland and a partner in Colombia is a well elaborated way that North-South scientific collaboration impacts science and technology in Colombia.

Furthermore, skilled Colombians usually transfer social remittances, which are a type of personally motivated initiative understood as practices, ideas and social capital which the migrants channel from the country of destination to the

country of origin, especially for the benefit of the less resourced social sectors in Colombia mainly through philanthropic activities.

Family or kin support is an additional advantage that skilled Colombians abroad offer their country of origin. The majority promote ties with their family and friends back in the homeland and keep in constant touch with their families in Colombia. Likewise, more than half of the skilled Colombians in Switzerland who were interviewed send financial remittances to their families on a systematic basis. The skilled Colombians encourage a productive use of the remittances that they send, most of which go towards financing the education of some of their family members or investing in the infrastructure of their family dwellings.

Other actions/practices of skilled Colombians which generate a positive impact include their contribution to building up the good reputation of Colombians abroad and the creation of an awareness of Colombia in an attempt to improve the general perception that people have of the country.

On the other hand, other actions and the practices of the skilled Colombians involve a transfer of knowledge to the country of origin. A third of the skilled Colombians who were interviewed maintain scientific and/or professional exchanges with Colombia on a permanent and systematic basis. Furthermore, most of the skilled Colombians possess abilities, knowledge and resources of great value which they can offer to the country of residence as well as to the country of origin, thanks both to their scientific and professional contacts as well as their international experiences.

Skilled Colombians do not follow specific “brain gain” strategies but rather, they base their initiatives on whatever opportunities present themselves as well as personal motivations and interests. Furthermore, constant communication, networking, forming institutional contacts and becoming part of associations, and the possibility to find suitable partners are all elements which have boosted the chance of seeing their initiatives carried out. For some Colombian scientists the good reputation that they have in the scientific field, their personal motivation and their scientific interests are additional positive elements, which allow them to carry out their projects for the benefit of Colombia.

The recommendations of the skilled Colombians on how to carry out initiatives for the benefit of Colombia are directed at the institutions in the country of destination as well as those in the country of origin, especially with regard to the necessary institutional and financial support.

The project identified three determining factors that facilitate initiatives of the Colombian scientific diaspora for the benefit of their country of origin: motivation; the ability to mobilise; and the appropriate environment and policies. The vast majority of skilled Colombians possess a deep desire to give something back, which can benefit their country of origin. Their strong feeling

of motivation towards Colombia is palpable. For many their reaction is to give their country back some of what it has given to them and this is based on personal inspirations and ambitions to make their knowledge, resources and experiences available to society in their country of origin.

The evidence shows how the mobilization of resources of the Colombians for their country of origin has taken place both on an individual and informal manner based on personal motivation and aspirations, as well as through collective efforts maintained especially through their participation in the ACIS where they share a sense of community. The skilled Colombians interviewed have participated in the creation of other associations of Colombians in Switzerland, dedicated to strengthening exchanges between the Swiss and Colombian or Latin American communities, promoting the integration of Colombians in Switzerland, fostering social and cultural activities or supporting social projects.

Some skilled Colombians do not tend to work in a group or promote mobilization for the benefit of Colombia through collective action. Some feel that the dispersion of the initiatives of the diaspora is little more than a reflection of the political polarization in Colombia. In this way, the Colombian case shows how weak social cohesion experienced by the Colombian society is reproduced in its diaspora, and one of its implications is the difficulty to meet their compatriots and form solid associations.

Nostalgia is a common element among skilled Colombian migrants. Despite being an element that grows stronger among emigrants with the passing of time, it is not a decisive element in terms of the promotion of common activities with compatriots in the country of destination.

The skilled Colombians expressed their opinion on the environment and policies to promote their initiatives for the benefit of Colombia. As far as the situation in Colombia is concerned, some of the Colombians believe that the situation has improved considerably in recent years. However, the social inequality in Colombia, evidenced by the gap between rich and poor, is a fundamental concern for skilled Colombians. Poverty, social polarization, the bad distribution of wealth and violence are elements that worry the Colombians in Switzerland.

As far as the political situation is concerned, the skilled Colombians believe that the weakness of the institutions, corruption, and the lack of transparency show that the Colombian institutions still have a long way to go in terms of governability and the state of law. On the other hand, Colombian scientists are sceptical of Colombia's scientific policy, emphasizing its lack of continuity and especially the lack of systematic support for this sector, which is fundamental for the development of the country.

The perception Colombians have of the socioeconomic and political climate of their country of origin influences the way they view the opportunities

that it offers them when they have to decide whether to return or remain in Switzerland. Skilled Colombians are convinced of the need for their country of origin to create opportunities in order to retain its human capital and also to encourage the return of those who have immigrated to other countries. The lack of opportunities which can encourage most skilled migrants to remain in Colombia is viewed as a major problem by skilled Colombians in Switzerland.

Skilled Colombians have an extremely positive perception of Swiss scientific policy in relation to the environment and the policies in the country of residence and they recognize that investment in science is a priority and that the public resources for research are enormous. However, they are more critical of Swiss migratory policy which they consider to be a failure insofar as it does not make the most of skilled migrants from developing countries that have lived in Switzerland for a number of years, and they disagree with the two-circle model which does not facilitate the integration of skilled persons from developing countries in the job market.

The skilled Colombians emphasized the fact that both the country of origin and the country of destination should recognize the potential and worth of the scientific diaspora through suitable policies that can take advantage of their resources and capacities.

With regard to their plans for the future, skilled Colombians are interested and motivated in terms of establishing or increasing their ties with their homeland and therefore they expect to have specific projects in the future with their Colombian counterparts. The possibility of making plans for the future is based on a stable professional situation. The evidence shows that, unlike lesser qualified people, skilled Colombians have a broader spectrum of options that allows them to plan their future.

Some skilled Colombians are interested in finding a system of living that will allow them to move between the two countries, Switzerland and Colombia, on a regular basis. On the other hand, half of the Colombians interviewed have no intention of returning to Colombia although they are interested in building or strengthening the ties between the country of origin and the country of destination. Many of those who wish to return are sceptical about the professional opportunities that Colombia can offer them, and they feel that they would be making an important professional sacrifice were they to return home, and therefore they are not really that willing to return. A favourable environment back in the homeland is the only thing that could encourage the return of the skilled Colombians and help them contribute to the progress being made in the socioeconomic development of Colombia. On the other hand, some skilled Colombians intend to return to Colombia once they have retired.

The Colombian case study shows how personal and family relations have become increasingly important factors in the decisions of migrants to leave

their country of origin and to return. It shows also how the skilled Colombian migrants who arrive in Switzerland on a temporary basis to study or pursue scientific training, and those who start a relationship with a Swiss citizen while they are in Switzerland, rarely end up returning to their country of origin. Likewise, in the case of Colombians with children of school age, the educational opportunities and the suitable environment for their children influence their decision to remain in Switzerland, return to Colombia or go to another country. Accordingly, the evidence shows that it is normal for children to determine the migratory routes of skilled migrants.

Some skilled Colombians consider their presence abroad to be of great importance for Colombia in terms of encouraging its national science and technology system. Likewise, the skilled Colombians in Switzerland believe it is primordial to have a systematic interchange between the skilled Colombians who have returned to Colombia and those who remain abroad.

Introduction

International migration occupies a position of priority on the current international agenda. While the magnitude of migratory flows and their complexity have increased in recent years, there has also been a rise in the interest in research which advances our knowledge of the reality of the phenomenon and the search for specific actions that can contribute to minimizing the negative effects and maximizing the positive impact of migration.

The research and action-oriented project “A Swiss Network of Scientific Diasporas to Enforce the Role of Highly Skilled Migrants as Partners in Development”² looked at the migration of highly qualified individuals as a social phenomenon and as a subject for study which is no longer perceived as something totally prejudicial for the countries of origin and approached the matter by examining the value of the resources and practices of the scientific diasporas in the promotion of the development of their homelands. Brain drain and the growing knowledge gap justify the innovative forms of knowledge transfer carried out both collectively through diaspora associations and networks as well as through individual strategies based on the personal motivation of skilled

2 The project was directed by the Cooperation@epfl unit at the EPFL and was carried out in collaboration with the International Labour Office (ILO), the University of Geneva (UNIGE), the University of Lausanne (UNIL) and the Swiss Forum of Migration and Population Studies (SFM), with financial support from the Geneva International Academic Network (GIAN).

migrants. The research included field work carried out during 2006 and 2007 through in-depth interviews of a qualitative nature with skilled migrants from three countries: Colombia, India and South Africa from the perspective of one country of destination (Switzerland) and included two workshops during which the political implications were discussed.

This chapter offers knowledge-based evidence on the Colombian scientific diaspora in Switzerland based on the results of this project. A total of 27 in-depth interviews were held with skilled Colombian migrants and these offered evidence on: 1) their migratory paths and living conditions in Switzerland; 2) their links to the country of origin and brain gain mechanisms and strategies; and 3) the best environment and support policies that encourage them to be partners in development. Through an analysis of the results of the research, this chapter provides a diagnosis of the situation, lists the activities and experiences of skilled Colombians in Switzerland and illustrates how the plethora of motivation, knowledge and resources that they have to offer have enormous potential in terms of having a positive influence in their country of origin. From a gender perspective, the research brings to light some specific elements of the experiences of skilled Colombian women in Switzerland.

Right from the moment of conception of the initial ideas on which this project was based, it was always clear that the Colombian case had to be included in this research study. The Colombian scientific diaspora is a global case of reference insofar as it was the first to put into practice the idea of the “scientific diaspora option” through the creation of the Caldas Network, the aim of which was to link Colombian scientists abroad with the local scientific community. A large part of the technical and human structure which made the creation of the Caldas Network possible, and which enjoyed its rapid rise and then suffered its downfall, had its origins in Switzerland. In spite of the lack of sustained support due to the irregularity in Colombian science and technology policy, the shortage of resources and lack of a consistent institutional strategy as well as poor recognition of the value of scientific diasporas in Switzerland, this structure continues to operate on an active basis being fed by the dynamism of Colombian researchers in Switzerland. However, very little is known about it.

The chapter provides empirical evidence on the transnational practices of skilled Colombians in Switzerland, showing the value of their resources in promoting development in the country of origin and specifically the Colombian agenda on science and technology. Particular transformations are revealed, for example: the strengthening of specific research areas thanks to their contribution to the creation of a critical mass in fields such as the environment, ICT and medicine or their influence in the design of science and technology poli-

cies. Although affective capital and the ability to mobilise are elements that the Colombian scientific diaspora can offer, there has been a lack of support from a consistent scientific policy that can capitalize on their resources. The conclusion reached is that the trend for the dynamic action of the Colombian scientific diaspora to advance faster than the local public policies which recognize it and take advantage of it needs to be reverted through its inclusion on the development agenda, while it is hoped that decentralized transnational activities that benefit the development of Colombia can continue and expand over the course of time.

The chapter provides some guidelines for future research into scientific diasporas, which suggests the areas that need to be studied in greater detail, and offers some political recommendations to take advantage of the resources of the scientific diasporas both in the country of origin and in the country of residence.

The chapter is structured in two main sections. The first section, which introduces the subject, offers a broad outlook of the Colombian context, including information on the socioeconomic and political situation, and it provides a general overview of the science and technology environment in this country. We also examine the origin of the Colombian scientific diaspora network, offering evidence of the importance that Colombian scientists in Switzerland played in its creation. The most significant Colombian institutional initiatives in favour of diasporas and skilled migration are also mentioned.

The second section presents the results of the research project on skilled Colombian migrants in Switzerland, providing an analysis of the empirical evidence gathered through field work, showing the most representative testimonies of the skilled Colombians who were interviewed. This second section is divided into five main parts. The first part offers a brief description of the research project and the methodology used. The second part shows the causes and the characteristics of skilled Colombian migration to Switzerland, describing their main determining factors and migratory routes and offering a portrait of the daily life of skilled Colombians in this country as well as their living and work conditions. A special emphasis is placed on integration in the country of destination, analysing the influence of the residence status and transnational identity with regard to their feeling of integration in Switzerland. The third part identifies some “brain gain” mechanisms implemented by the skilled Colombians which generate an impact in the country of origin, which brings to light the importance of the role played by the Association of Colombian Researchers in Switzerland (the ACIS) in promoting bilateral, bottom-up scientific collaboration. We also highlight other actions and practices of skilled Colombians which involve a transfer of knowledge, including social remittances and other transnational practices and positive impacts for the benefit of Colombia. In the

fourth part three determining factors which facilitate the initiatives of the Colombian scientific diaspora for the benefit of their country of origin are identified: motivation; the ability to mobilise; and a suitable environment and appropriate policies. We can see how the mobilization of the resources of Colombians towards their country of origin has taken place in both an individual and informal way based on personal aspirations, and through collective efforts maintained especially through their participation in the ACIS. Evidence is provided of the need for both the country of origin and the country of destination to recognize the potential and the value of the scientific diasporas through suitable policies which can take advantage of their resources and abilities. The fifth part provides evidence of the future plans and expectations of skilled Colombian migrants in Switzerland. A final section outlines the conclusions and makes specific recommendations to capitalize on the resources of the Colombian scientific diaspora to benefit the development of Colombia.

1. Colombian Context

1.1 General Political and Socioeconomic Situation in Colombia

Colombia, with its 45 million inhabitants, is a country that has many valuable natural, cultural and social resources. Today it has one of the fastest-growing economies in Latin America. Despite these resources, as in other Latin-American countries, the country's wealth is unequally distributed among its inhabitants. In socio-political terms, what makes Colombia stand out from other countries in the region is its armed conflict, whose roots lie in the rise of the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN)³ at the beginning of the 1960s. This conflict has affected every class, social organisation and area of the country, and, as a result, social violence has spread through the entire social framework. The consequence has been an erosion of legality and the rule of law. The current President, Alvaro Uribe, who was re-elected in 2006 for a second 4-year term, rose to the presidency promising to implement a democratic security policy that would re-

3 These organisations encourage armed conflict to address social, political and economic inequalities in Colombia, and promote solutions to the populations' social needs against what they consider 'a failed democracy'. In addition to using violence, they are also involved in drug trafficking.

establish public order and help to undermine the guerrilla forces and thus resolve the social conflict. With this in mind, Uribe initiated peace negotiations with the aim of dismantling the various paramilitary groups. He offered them an amnesty under the controversial Peace and Justice Act. His actions have fuelled great expectations in Colombian society. A further direct consequence of the social conflict has been the humanitarian crisis that Colombia has faced as a result of the large number of people who were forced to flee their homes. According to IOM data (2005), there were about 2.5 million internally displaced persons (IDPs) in Colombia at the end of 2002. This is one of the largest populations of IDPs in the world. According to data from the same source, more than 1.2 million Colombians have emigrated since 1997. Remarkably, however, the turbulent social and political situation in Colombia has not prevented strong economic growth in recent years.

The Colombian economy has seen much positive development in recent years and shown significant growth prospects, mainly as a result of increased investment over the past six years. The Colombian economy registered growth of 6.84% and 7.52% in 2006 and 2007 respectively, in part based on the remarkable growth of over 10% in the manufacturing industry, transport, construction and trade sectors and through privatisation and further private sector investment in the coal, petrol and gas industries.⁴ Other positive factors are an increase in exports⁵ and remittances from abroad, as well as in foreign direct investment (FDI), which exceeded US\$ 6,000 million in 2006 and increased by 40% in 2007 with US\$ 9,000 million according to the same source. This increase, alongside the country's position as the third most popular destination for FDI (after Brazil and Mexico) in Latin America, is a clear sign of foreign investors' confidence in Colombia's economic opportunities. Moreover, it is worth mentioning industrialised countries' support for Colombia through eco-

4 Source: Colombian Economic Gazette (Boletín Económico de Colombia, April 2008), prepared by the Colombian Embassy in Switzerland (<<http://www.emcol.ch>>).

5 It is worth mentioning that Switzerland is the fourth destination country for Colombian exports and these were up by 58% in 2007 compared to 2006 reaching US\$ 885 million. Similarly, imports from Switzerland increased by 37% over the same period to a total of US\$ 339 million according to data from the Colombian Economic Gazette (Boletín Económico de Colombia, April 2008). Moreover, in the context of the celebration of the centenary of diplomatic relations between Colombia and Switzerland, a Free Trade Agreement was signed between Colombia and the countries of the European Free Trade Association (EFTA) in November 2008. With this agreement, Colombia has consolidated its trade relations in goods, services, and investment with these European countries whilst also strengthening its strategy to become an active member of the international community. The agreement was approved by the Swiss Federal Council on March 6th 2009.

conomic and trade policy measures to foster development.⁶ As RICYT's "State of Science 2008" report shows, these macroeconomic data indicate an encouraging panorama. Colombia's case is one example of the six-year cycle of sustainable growth (2002–2008) from which Latin America has benefited.⁷ However, a large section of the Colombian population still lives in poverty and has no access to the prosperity that can be expected of this economic growth.

1.2 Science and Technology in Colombia

Economic conditions affect a country's potential to encourage the development of national systems of science, technology and innovation, as stressed in the UNESCO Science Report (2006). The brief overview of the recent economic situation in Colombia provided above may give us some clues to its potential in terms of the advancement of science and technology (S&T). Some statistical data about S&T in Latin-America and the Caribbean region might well be useful at this stage to offer an overview of Colombia's position and regional potential in the S&T sector. According to data from the UNESCO Science Report (2006), the Latin American and Caribbean region (LAC) accounts for 8.3% of the world's population and 8.9% of the world's GDP. However, this region represents only 3.2% of the world's investment in research and development (R&D), while Asia, with a population six times greater, represents 35% of investment worldwide in R&D. On average, the LAC countries invest 0.6% of their GDP in R&D, while the world's richest countries each invest 2–3% of their GDP in this area. LAC countries contributed only 2.6% to the total scientific publications worldwide in 2001, and this contribution was much lower than that of Asia (18.2%) and paled into insignificance when compared with figures for the richest countries (31.8% for North America and 42.1% for Europe). The contributions by LAC countries are unequally distributed; for instance while Brazil represents over 40% of the total scientific publications from LAC countries and Mexico and Argentina account for 20% of the total, Chile, Venezuela, Cuba and Colombia each contribute less than 8%.

6 For example, according to the official communication (<<http://www.seco.admin.ch/aktuell/00277/01164/01980/index.html?lang=en&msg-id=17694>>) dated 070308 aiming to improve the effectiveness and efficiency of Swiss development cooperation, the Swiss Federal Council approved a total of 800 million of Swiss francs (some US \$ 700 million) over a period of four years (2008–2012) to finance economic and trade policy measures in favour of development to seven countries (one of them being Colombia), which will allow the State Secretariat for Economic Affairs (SECO) to continue its bilateral cooperation activities in favour of developing countries.

7 <<http://www.ricyt.org/interior/interior.asp?Nivel1=6&Nivel2=5&IdDifusion=25>>.

The UNESCO figures and data clearly show that in most countries in the LAC region, the percentage of investment in S&T fluctuates wildly from one year to the next according to economic and political circumstances, which Cetto and Vessuri (2006) stress as factors that have “a direct influence on the stability and potential of developing national science, technology and innovation systems.” Moreover, these indicators highlight the overriding problem of a lack of both human and financial resources for S&T activities in the LAC region. These statistical data indicate that, apart from the case in point of Brazil, the LAC region still has a long way to go until it can be regarded as a major player in the international scientific arena. Nevertheless, like most developing countries, LAC countries are generally aware of the need to strengthen their S&T capacities, which are still weak, if they are to build a knowledge society that recognises knowledge, education, science, technology and innovation “as the most important engines for progress today” (Tindemans, 2006).

There have therefore been some important and noticeable efforts made to raise the profile of national science, technology and innovation systems. LAC countries are also aware of the importance of making use of cooperation in this regard “which is for them a possibility to enlarge their horizon further their national frontiers” (Cetto and Vessuri, 2006); Colombia is also following this general trend.

According to the Network of Science and Technology Indicators writing in its “State of Science 2008” report,⁸ Colombia has 45 million inhabitants and a GDP of US\$ 135 billion (2006). Its total annual expenditure on S&T in 2006 was US\$ 636 million, which represented 0.47% of GDP⁹ (Table 1). Colombian

8 The data from RICYT (<<http://www.ricyt.edu.ar>>) are based on information provided by its member countries following the rules of the Frascati Manual of the OCDE (<http://www.madrimasd.org/MadridIRC/documentos/doc/Manual_Frascati_2002.pdf>), which is one standard for R&D surveys worldwide. However, it is worth mentioning that RICYT’s data does not necessarily match the figures published by Colciencias and the Colombian Science and Technology Observatory. Concerning expenditure on S&T in Colombia, the Colombian Science and Technology Observatory does in fact mention in its document “Indicadores de Ciencia y Tecnología, Colombia, 2005,” that the data it provides is based on estimations since “no serious and complete study has been made that would allow precise numbers to be provided” (p. 15), and states that “in reality we do not know how much Colombia spends on S&T” (p. 15) (<<http://www.ocy.org.co/COLOMBIA2005.pdf>>).

9 The document “Indicadores de Ciencia y Tecnología, Colombia, 2005” by the Colombian Science and Technology Observatory reports that current expenditure on S&T lags far behind the 1% recommended by the Colombian Science, Education and Development Mission in 2004 and which is considered by the United Nations as the absolute minimum for a nation to be on the threshold of development (<<http://www.ocy.org.co/COLOMBIA2005.pdf>>). Moreover, this document underlines that the Colombian government has set a goal for 2019 (in the Colombian Vision for the Second Centenary of its Independence) of 1.5% of GDP, half of which is to come from the private sector (p. 15).

expenditure on S&T as a percentage of GDP reached its highest level in 1995 and 1996 (0.55% and 0.56% respectively), but a couple of years later, in 1998 and 1999, investment in S&T activities had fallen to 0.32% of GDP; these figures were the lowest investment in terms of the percentage of GDP since 1995. Today, the investment in S&T by type of activity breaks down as follows: 24% goes to basic research; 29% to experimental development; and 47% to applied research. According to data for 2006 from RICYT, 43.26% of Colombian S&T activities are financed by the government, 39.58% by the private sector, 11.29% by higher education institutions, 3.12% by foreign funders and 2.75% by NGOs. Data from recent years provided by RICYT show how the private sector has assumed a significant position in the S&T sector and everything suggests that this will only grow in the future.

As far as the human capital devoted to science and technology goes, data from RICYT shows that only 60 PhDs were completed in 2005 in all disciplines and fields followed by 39 in 2006.¹⁰ With an average of 43.5 PhDs in all fields completed over each of the last 7 years (2000–2006), the Colombian national science, technology and innovation system has a long way to go in terms of knowledge generation, while there is also a need to foster the emergence of top-level human capital. This situation also shows that the established links to the Colombian scientific community abroad are of strategic importance and should also be encouraged. As mentioned above, international cooperation plays a key role. Although they are mainly motivated by specific research needs, there are significant additional reasons for joint scientific projects which include: the acquisition of new skills and knowledge; mutually beneficial exchanges; access to laboratories and local data; increase in the impact or the influence and scope of research results; or simply having the opportunity to work in a different environment or with colleagues from various parts of the world. The UNESCO Science Report 2006 shows that between 1999 and 2002, the total number of joint publications accomplished in Colombia in collaboration with international partners came to 1,337 (529 were conducted with partners from within the LAC region, 679 with partners in the United States, and 740 with partners in the European Union).

10 In 2005 the PhDs were completed in the following areas: 24 in natural sciences; 8 in engineering and technology; 4 in medical sciences; 3 in agro-sciences; 18 in social sciences; and 3 in humanities. In 2006: 17 in natural sciences; 4 in engineering and technology; 1 in medical sciences; 4 in agro-sciences; 10 in social sciences; and 3 in humanities (<<http://www.rieyt.edu.ar>>).

Table 1: Indicators for science and technology in Colombia

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Population (million)	38.54	39.23	40.02	40.77	41.54	42.30	43.04	43.78	44.53	45.29	42.09	43.00
GDP (in millions of US\$)	80,525	97,147	106,671	98,444	86,186	83,786	81,990	81,122	79,458	96,673.8	122,939	135,000
Expenditure on S & T (in millions of US\$)	441.9	546.9	561.4	316.3	275.4	367.2	391.4	378.1	382.7	514.0	632.4	636.0
Expenditure on S & T (as a % of GDP)	0.55%	0.56%	0.53%	0.32%	0.32%	0.44%	0.48%	0.47%	0.48%	0.53%	0.51%	0.47%
Expenditure on R & D (as a % of GDP)	0.29%	0.30%	0.27%	0.21%	0.20%	0.18%	0.17%					
Number of PhDs completed				6	16	28	42	38	55	43	60	39

Sources: RICYT indicators and UNESCO Science Report 2006.

The approval of the new Colombian Law on Science, Technology and Innovation¹¹ at the end of 2008, replacing the previous legal S&T framework that has been in force since 1990, was extremely significant. The new framework aims to encourage an interdisciplinary model linking academia and research with the national productive sectors by means of a fund that will facilitate the management of public and private funds as well as those from international scientific cooperation; it will also encourage private sector participation in scientific and technological research and innovation. To do this Colciencias, the Colombian Institute for the Development of Science and Technology,¹² has become an Administrative Department with its own separate budget and is responsible for managing the National Fund for Science, Technology and Innovation.¹³ These changes have given Colciencias considerable autonomy and power to act, and consolidated its position at the head of the S&T sector in Colombia. Furthermore, the visible efforts by the Colombian government to raise the status of S&T among public investment priorities is reflected by the substantial increase in Colciencias' budget in the last few years. Hence, a total of more than 585 billion pesos¹⁴ have been allocated to the S&T and innovation sector

11 Officially in force through the promulgation of Law 1286 of 2009.

12 The Colombian Institute for the Development of Science and Technology "Francisco José de Caldas," Colciencias, was created in 1968 as the entity responsible for science and technology in the country.

13 This is the culmination of a long process encouraging the development of the *knowledge society* in Colombia, considering science, technology and innovation to be key issues for the country's development. There was a change in the legal framework that had been in force since 1990 when Colciencias was transformed from an institute to an administrative department, the "Administrative Department of Science, Technology and Innovation," with its own separate budget and the right to participate in the Council of Ministers and in the National Council of Economic and Social Policy (<<http://www.colciencias.gov.co/>>).

14 Around US\$ 248 million.

for the 4-year period from 2007 to 2011.¹⁵ In annual terms, the budget of 81 million pesos for 2007 was doubled to 161 million pesos for 2008.¹⁶ As the Colombian Science and Technology Observatory points out, these efforts to encourage S&T through greater financial support are part of progress towards the goal of spending 1% of Colombia's GDP on activities in this sector in 2010 and 1.5% in 2019, with 50% of this coming from the private sector.¹⁷

1.3 The Origins of the Colombian Scientific Diaspora Network

Colombia was one of the first countries to put the idea of the scientific diaspora option (Barré et al., 2003) into practice when, at the beginning of the 1990s, it created the Caldas Network of scientists abroad. Indeed, for many years the Caldas Network was regarded as the most advanced example of this brain gain strategy and was followed by initiatives by other countries such as Argentina, Chile or Venezuela in Latin America, India and Korea in Asia, and even South Africa in sub-Saharan Africa.

The context of science and technology policies in Colombia at the time the Caldas Network was created was a special one. While Colciencias, the Colombian Institute for the Development of Science and Technology was created already in 1968, it was only at the end of the 1980s that the Colombian government began to formulate and implement major policies in this area, recognising the important role science and technology (S&T) play in socio-economic development. At the end of the 1980s, the first PhD programmes were established, but scientific research was developed almost exclusively at universities and as a purely academic activity with few links to industry and other fields of social activity. In spite of various initiatives, there was no real will to establish a long-term national scientific policy and this, together with the still limited encouragement given to science through governmental policies, showed that S&T was not one of Colombia's major priorities.

However, there were several dramatic social, political and economic changes at the beginning of the 1990s, mainly caused by the shift from a protectionist economic regime to a more liberal one. All these changes managed to offset the lack of any tradition of cooperation between S&T and other productive sectors, and contributed to more efficient forms of science practice, with the 'triple entente' of university, state and industry (Waast, 2003) as the central model. The

15 <<http://www.colciencias.gov.co/>>.

16 An increase of US\$ 34,4 million in 2007 to US\$ 69 million in 2008.

17 "Indicadores de Ciencia y Tecnología, Colombia, 2005" (<<http://www.ocytt.org.co/COLOMBIA2005.pdf>>).

National System of Science and Technology was created and Colciencias acquired a central role as the entity responsible for organising all policy-implementation and fund-management activities. At the same time, various sectors of the economy were exposed to international competition and one of their central concerns was how they might enhance their own competitiveness by linking up with science. Colombia, a country with a small, dispersed and mainly inward-looking scientific community, perceived a need to mobilise its external resources in order to develop its national scientific capacities. When it was pointed out that there was a risk of scientists being isolated – the norm among Colombian researchers – a link to the Colombian scientific community abroad became a priority.

Meyer et al. (2001) mention three conditions that were essential in making the Colombian scientific diaspora a viable approach to enhancing S&T in Colombia: 1) the emergency of electronic communications at the beginning of the 1990s; 2) the existence of skilled Colombian migrants around the world willing to contribute to the development of their homeland;¹⁸ 3) a clear political strategy offering skilled migrants the possibility to turn their desire to contribute into reality.

In the Colombian case, electronic communications helping skilled migrants to become active were emerging and these people were already motivated; these factors inspired Colombian institutions' plan to create a network of Colombian researchers abroad. Although the idea was first voiced in Colciencias circles, it was actually the Colombian scientific diaspora that played the most important role. In fact, the creation of Colext (Colombians abroad in its Spanish acronym) at the CERN (European Organization for Nuclear Research) in 1990 was the first time Colombian researchers had used the internet as a tool to communicate among themselves and for strategic cooperation. This was a server list of Colombians abroad created by a Colombian scientist¹⁹ that aimed to enhance social exchanges and support collective action. This project was indeed the critical factor that enabled Colombians abroad to express their shared identity (Fibbi and Meyer, 2002) and sense of community with members of the same national group. This shows the extent to which the scientific diaspora option is based on collective action and, as Cohen (1997) argues, brings together members of the same ethnic group who live where the specific diaspora is located. Although Colext was not a list dedicated to scientific and technological communication (its aim

18 This willingness to contribute to the development of their mother country is known as migrants' *affective capital*, which is an entrenched characteristic of diasporas' identity (Tejada, 2007; Tejada and Bolay, 2005).

19 Fernando Rivera told us during a conversation that he started Colext to link up Colombian students abroad when he was a physics researcher at CERN, before it was taken over by the government and became the Caldas Network. He pointed out that "the network had momentum, but it did not receive any long-term governmental support."

was to foster social exchange), it mainly put people in the academic sector in touch with each other, since universities and academic centres were the only places connected to electronic networks at that time. The number of Colombians abroad on this list grew rapidly and there were a few hundred such members by the following year.

In 1992, Colciencias took over the Colext structure and created the Caldas Network, with nodes in different countries, its main objective being to link Colombian scientists and researchers studying or working abroad with the scientific community and national research programmes in Colombia. Colciencias also increased the number of Colombian graduate students abroad by expanding its graduate training programme. In fact, during the period from 1992 to 1997, Colciencias supported between 51 and 176 graduate students abroad per year, gradually forming a community of almost 850 graduate students at the world's best universities, the majority of them at PhD level (Chaparro et al., 2006). According to Chaparro et al. (2006), the Colombian graduate students with grants joined with others who were not supported by Colciencias but who wanted to give something back to their homeland and became the backbone of the Caldas Network.

The Swiss node of the Caldas Network was one of the most active, and it established links with major Colombian universities. It is well known that at one stage it included some of the most important Colombian researchers abroad, which shows how significant it was. The Swiss node functioned through the Association of Colombian Researchers in Switzerland (the ACIS in its Spanish acronym).²⁰ The creation of the ACIS in 1992 was an original and recognised *brain gain* initiative by the Colombian scientific diaspora in Switzerland: it was a scientific association set up to promote collaborative links between Colombian researchers in their homeland and the Colombian scientific community in Switzerland.²¹

As Charum and Meyer (1998) explain, the creation of the Caldas Network did respect official discourse, but it was the local strategies implemented by the members that enabled the various actors to complement each other's work. In other words, Colombian institutions provided the enabling environment, while the motivation and the ability to mobilise, which Brinkerhoff (2006) describes as entrenched characteristics of scientific diasporas, along with the infrastructure they created, were the factors that actually made the Colombian scientific diaspora option possible.

The main practical objective of the Caldas Network was to develop collaborative research projects between Colombian research groups and their coun-

20 <<http://www.acis.ch/>>.

21 The creation of the ACIS, its main characteristics, its role and its members' profile will be further discussed in the next sections of this chapter.

terparts at universities around the world where Colombians were studying and doing research.²² Various specific types of contribution by the Colombian scientific diaspora were identified. Some that are worth mentioning are: the design and implementation of public policies (some diaspora members were appointed by Colciencias to carry out evaluation and advisory tasks); training and education in S&T (courses, students exchanges, etc.); communication and mobilization (information on scientific meetings, professional offers, scholarships and project funding possibilities); and programmes and projects (Charum et al., 1997; Charum and Meyer, 1998). This shows how it is possible to mobilise skilled migrants and make use of their resources to contribute to the development of their country of origin by taking advantage of advances in information and communication technologies. It also represents an innovative and decentralised approach to implementing a brain gain strategy and, according to Castells (1997), is an example of the networking logic in the information society. However, there is no register of the projects that were successfully formulated and implemented; it is therefore not possible to determine the real impact of the Caldas Network in terms of specific projects benefiting the home country.

After a dynamic launch that met with great enthusiasm, the Caldas Network lost momentum at the end of the 1990s, mainly due to a lack of funding for projects and to the general S&T crisis in the country.²³ Colombia's insufficient institutional capacity to host the projects, resources and initiatives of its scientific diaspora hindered the potential impact of their trans-national practices on endogenous socio-economic development. Last but not least, this also created great frustration within the Colombian scientific diaspora. Today, the Caldas Network is remembered as an innovative strategy to harness the capacities and resources of the scientific diaspora, but it is well known too that it created many hopes to which it was then unable to provide the appropriate response. Revitalising the Caldas Network is now one of the strategic objectives of Colciencias, which was established in 2006 to obtain significant results in international cooperation and in the development of joint projects. Colciencias' policy of international expansion prioritizes the articulation of initiatives coming from the Colombian scientific diaspora, and promotes the entry of the Colombian community into international research networks and projects.

22 Some examples of the joint projects carried out as well as an evaluation of the Caldas Network have been published in two books (Charum and Meyer, 1998; Charum et al., 1997). Other publications about the Caldas Network followed, giving details of how the network was set up as well as its characteristics and achievements (Meyer et al., 1997; Granés et al., 1998; Barre et al., 2003; Chaparro et al., 2006).

23 As shown in Table 1, the investment in S&T activities in 1998 and 1999 was 0.32% of GDP, the lowest investment percentage since 1995, after having reached a peak of 0.55% and 0.56% in 1995 and 1996 respectively.

The “*Colombia nos une*” (Colombia unifies us) programme set up five years ago by the Colombian Ministry of Foreign Affairs is another significant institutional initiative aimed at the diaspora. This initiative seeks to establish and/or reinforce links with the Colombian community abroad by recognising them as key elements for Colombia and by attempting to establish this as a public policy objective. The programme is organized around nine thematic areas, which represent the main needs of Colombians abroad, while a number of themed networks have also been established in accordance with the common interests of their members.²⁴ One of them, the Network of Students and Professionals Abroad, operates as a virtual community of persons and seeks to enhance cooperation links between Colombian students abroad, students who plan to emigrate and those who have returned to Colombia. Another network, the RedesColombia, which was set up in December 2007 with the support of the Colombian Ministry of Foreign Affairs and the International Organisation of Migration (IOM), is an innovative portal which offers contacts, cooperation and helps to create and develop Colombian social networks on the Internet. Its purpose is to provide Colombians abroad with the possibility of contributing to the development of their homeland. Moreover, RedesColombia has recently launched the project Redes C aiming at creating a network of networks to link Colombian scientists and researchers abroad with those based in Colombia as well as with other diverse actors in the Colombian national S&T system to create a positive impact in Colombia.²⁵

In addition, guidelines for an Integral Migration Policy were put forward in June 2008 with the aim of promoting an overall policy on international migration. This highlighted the large number of Colombians living abroad, showing that some 4 million Colombians live outside the country (almost 10% of the total population),²⁶ and their financial remittances reached a total of some

24 <<http://www.colombianosune.com>>.

25 The creation of Redes C (Red Colombiana de Conocimientos en el Mundo) is part of the project CIDESAL (Creación de Incubadoras de Diásporas del Conocimiento para América Latina) of the Agence Française de Développement which has the objective of reverting the exodus of human capital from three Latin American countries –Colombia, Uruguay and Argentina–, through a systematic and organised association of their scientific diasporas, in which RedesColombia participates (<<http://www.redescolombia.org/redc/>>).

26 According to the IOM (2005) more than 1.2 million Colombians emigrated between 1997 and 2005. Similarly, according to the Colombian Ministry of Foreign Affairs, 10% of all Colombians live abroad, and almost 50% of this total lives in North America (<<http://portalminrelext.gov.co>>). Following Riaño-Alcalá and Goldring (2006), this migration has been determined by three main factors: the worsening of the armed conflict in Colombia; the deterioration of spaces for democratic participation and social inclusion; and the economic crisis that Colombia suffered between the late 1980s and the 1990s due to the shift towards a neo-liberal economy.

US\$ 4 billion in 2007, accounting for almost 3% of the country's annual GDP.²⁷

All these initiatives show the Colombian government's readiness to consider diasporas a source of knowledge, ideas, skills and further resources and eagerness to find benefits from the potential impact of migrants' resources and trans-national practices on development. However, the real objective behind involving the scientific diaspora in the Colombian development agenda through sustained support based on a coherent policy on S&T still remains unclear. It seems that there is still a long way to go if we are to see a move from plans and promises to real consistent actions. The scientific diaspora also has to overcome its scepticism towards public actions with regard to their involvement in the Colombian development agenda, since Colombian institutions have created great expectations for their scientists abroad on different occasions in the past without actually going on to give them the capacity to fulfil them. Promoting ownership of the new public initiatives by diaspora associations and organizations can certainly contribute in this regard.

2. Colombian Skilled Migrants in Switzerland

2.1 Project Background, Case Study and Methodology

The project 'A Swiss Network of Scientific Diasporas' involved three case studies tracing skilled migrants²⁸ from Colombia, India and South Africa living in Switzerland. For the Colombian case-study, field work included twenty-seven (27) in-depth interviews with skilled Colombians (15 women and 12 men) living and/or working mainly in Lausanne and Geneva, and to a lesser extent in Bern and Basel. During face-to-face interviews, participants were asked open-ended semi-structured questions that allowed researchers to gain a better understanding of the conditions, practices and opinions of skilled migrants in three main areas: 1) their migration trajectories and living conditions; 2) their links with their home countries and the *brain gain* mechanisms and strategies they adopted; and 3) good scientific and development policies and practices to support skilled migrants as development partners.

27 <<http://www.minrelext.gov.co/WebContentManager/Repositorys/site0/lineamientosPIM-final-junio132008.doc>>.

28 Since this article is based on research done in the country of destination, the terms "migrants" and "immigrants" are used interchangeably here.

Using the term highly skilled as defined by the Canberra Manual of the OECD (1995), the sample included human resources in science and technology.²⁹ Appropriate subjects for the survey were identified through networking schemes (mainly through personal contacts) as well as a web search, and the selection of respondents was made gradually over the course of the field work. We found the respondents through personal contacts, the *snowball* principle, information from embassies, universities, research institutes, private companies, diaspora networks and associations, alumni offices and international organisations. For the sampling strategy, we decided to limit the number of respondents to 25–30 and to ensure the representation of women and the professionally active in different sectors as well as PhD students from different disciplines within this group.

The sample contains four different categories³⁰: of respondents 1) scientists, post-doc researchers and students at academic and research institutes (at EPFL, HEIG-VD, Bern University Hospital, UNIBE, UNIL, IDIAP, Ludwig Institute for Cancer Research³¹); 2) staff working for international organisations (at the UNO-NGO liaison office, ITU, Secretariat of the Basel Convention of the UNEP, CASIN³²); 3) managers and consultants working in the private sector (at Nestle, Novartis, Hoffmann-La Roche, Teamwork Management, BOBST Group); and 4) people working in government institutions (Canton of Vaud). Additionally, one respondent was unemployed at the time of the interview.

29 Following the Canberra Manual definition, our sample included individuals who comply with one of the following characteristics: individuals who have successfully completed tertiary education, implying at least 13 years of schooling (Carrington and Detragiache, 1998) in science (knowledge) or technology (application of knowledge) and/or people who may not necessarily have had such an education but are employed within an area of science or technology and hold positions that would normally require tertiary education. Accordingly, highly skilled resources are made up of three types of individuals: individuals who have completed tertiary education and are employed in a professional area within the fields of science or technology; individuals with this educational background who are not employed in a professional area within science or technology; and individuals who do not have such an education but who are employed in an area in science or technology.

30 See Annex 1: Socio-demographic characteristics of respondents.

31 Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD), University of Bern (UNIBE), University of Lausanne (UNIL), Dalle Molle Institute for Perceptual Artificial Intelligence (IDIAP).

32 United Nations Office-Non-Governmental Organizations liaison office (UNO-NGO), International Telecommunications Union (ITU), United Nations Environmental Programme (UNEP), Centre for Applied Studies in International Negotiations (CASIN).

2.2 Causes and Characteristics of Colombian High Skilled Migration to Switzerland and Migrants' Life

The first part of the interview involved asking skilled Colombians about the causes and motivations for their migration and their migration paths. This also allowed us to build up a social portrait of their professional and private life in Switzerland.

2.2.1 Migration Determinants

Although there are a range of factors and motives behind qualified Colombians' immigration to Switzerland, their main reason is for study and training, and to a lesser extent for professional reasons, family regrouping, and marriage or for socio-economic reasons.³³ In this way, the determining factors and causes of Colombian immigration in Switzerland can be summarised by the following types of factors: 1) studies/training; 2) family regrouping/marriage; 3) professional; and 4) socio-economic. These factors are often combined with a desire to travel and see other cultures.

Studies (postgraduate and PhD) and scientific training (post doctorate) are the most important reasons for qualified Colombians to reside in Switzerland. While this presence is very significant in the French-speaking part of Switzerland, it is not so high in the German-speaking part. Most of the Colombians we interviewed who came to Switzerland to study or train were at the EPFL or the UNIL. This is mainly due to the *social networks* (Vertovec, 2003; Bruggeman, 2008) that have grown up over the past one or two decades and to the *social capital* (Bourdieu, 1986) drawn from those networks.³⁴ It is well-known that in migration today information about people's experiences, living conditions and job and scholarship opportunities in the host country flows back through people's immediate and extended social networks. Vertovec (2004a) stresses that "rapid and real-time communication fuels anticipation among would-be migrants" (p. 18). In Colombia's case, skilled migrants find study and training opportunities (and then a job – see below) in Switzerland, and their experiences encourage and help others to migrate. The networking effect is reinforced

33 It would be interesting to compare our results with those of the empirical study *Colombia Networks Survey* (Encuesta Redes Colombia) applied at the end of the 1990s to Colombians in research and academic centres worldwide. Its results showed that 75% of Colombians abroad left mainly to study and/or to train, while 10% left Colombia to work and an additional 15% had other reasons for departing (Charum and Meyer, 1998).

34 The importance of social networks and social capital for the integration of skilled Colombians in the host society is looked at in another section of this chapter.

by a snowball effect since respondents' colleagues, friends, relatives or friends of friends were often PhD students or postdoc researchers in academic and research institutions in the French-speaking part of Switzerland too. Thus Colombian skilled migration has led to more migration.

The Colombian scientists who emigrated to study and/or train acknowledged that the limitations in some scientific areas in Colombia were a significant *push factor*. According to those interviewed the lack of funding for knowledge activities, the shortage of materials and equipment, as well as the small number of research positions mean that the levels of scientific excellence as well as the available resources and infrastructure are better in Switzerland than they are in Colombia. The lack of doctoral programmes in specific areas was also a significant *push factor*. Skilled Colombians said:

I left Colombia 20 years ago and the main reason was that I wanted to have the opportunity to advance my scientific knowledge. In Colombia, there were no PhD programmes in my area and no resources for research or the encouraging environment, the technology or infrastructure. There were only a limited number of positions available.

(Researcher in Neurosciences, working for a pharmaceutical company in Basel)

I came because of my intense passion for science and professional and scientific achievement and because there was no PhD at a high research level in Colombia in my field.

(Postdoc in Chemistry and Microtechnology at EPFL)

Colombia has a high level of education and PhD programmes, but it has fewer resources, so excellence in education is hard. In chemistry, there is not enough equipment or instruments. I wanted the opportunity to observe how Europe works and how it does science. I was willing to be trained and to learn state-of-the-art techniques, and then go back to my country and make a contribution.

(Researcher and PhD student in Chemical sciences at EPFL and professor in Colombia)

The respondents came from disciplines and fields including physics, engineering, biology, computer and communication sciences, medicine, immunology, neurosciences, chemistry, environmental sciences, geography, economics, management and administration, architecture, geology, and hydrology. As stated by the OECD (2007), student mobility offers a potential pool of qualified workers, whether during their study years or for subsequent recruitment. In the Colombian case, this hypothesis of a transformation from migration for studies to migration for work is repeatedly proven true. The majority of respondents entered the labour market once they had completed their doctoral studies or training; some of them even start carrying out a paid activity during their studies.³⁵

35 This trend was already perceived in the late 90s when *Colombia Networks Survey* (Encuesta Redes Colombia) showed that 50% of Colombians studying abroad were at the same time carrying out a paid activity (Charum and Meyer, 1998).

Many of them initially came for a short period and stayed longer than originally planned. One respondent said:

30 years ago, I left Colombia because I won a Swiss government scholarship for one-year's studies at EPFL; the second year I started working as a research assistant. That original year has now been prolonged up to 30 years.

(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

Often, there is a mixture of personal agendas and potential professional and training opportunities behind the decision to migrate. Personal and family relations play an increasingly important role in migration. According to OECD data (2007), family migration is still the dominant reason for the inflows of permanent immigrants; this is due to family reunification and "*family formation*" (marriage), but also to immigrant workers' accompanying them.³⁶ Family regrouping/marriage is the second most important factor for the qualified Colombians who have immigrated to Switzerland. The respondents who asserted that the reason they left Colombia was for family reunification, to live in a partnership or to get married were all women. Their main reasons were to follow their Colombian husbands in their scientific careers or to marry or live with a Swiss citizen – so-called *love migration* (Riaño, 2003). Skilled Colombian women said:

I don't think it had ever crossed my mind to move to Switzerland, but I fell in love with a Swiss national whom I met in Washington.

(Senior Economic Counsellor and MBA student in Geneva)

I came to Switzerland because my husband is Swiss. We got married and decided to live here whilst he finishes his PhD. I was living in Germany and started to look for working opportunities here. When I got this job at EPFL, I moved to Switzerland for good.

(Scientist in Microbiology at EPFL)

I left my country of origin due to love; my husband is Swiss. I met him in Colombia. He wanted to show me his country and introduce me to his family so I came with him when he had to defend his PhD thesis in Paris. We originally came for one year, but the economic conditions and political situation in Colombia made us stay here.

(Educational psychologist working in a government institution in Lausanne)

However, while women have always migrated as spouses and family members, recent data shows an increasing trend for women to migrate independently in pursuit of training opportunities or professional prospects in places that offer

36 According to data on immigration in OECD countries in 2005, family migration accounts for between 45 and 60% of all permanent type migration to most OECD countries (OECD, 2007).

better conditions than in their home country (OSCE, IOM, ILO, 2006).³⁷ This, combined with a clear feminization of migration,³⁸ underlines the need to include gender dimensions in migration research. Furthermore, the Colombian case validates what studies by Riaño (2003) and Riaño and Baghdadi (2007) on female skilled migration prove, since many Latin American women who arrive in Switzerland for marriage are graduates. Regarding family regrouping as a reason for migration, some respondents mentioned that the decisive factors for their departure were the presence of family members in Switzerland, along with the search for better professional and living opportunities. One 30-year-old respondent with dual nationality (Swiss and Colombian) and two small children said:

My brother and sister were already living in Switzerland; we are Swiss, so they were studying here. I had recently gotten married so I thought I'd come for a long honeymoon. At the late 90s Colombia was having a construction crisis and we are both architects so we thought it would be nice to leave while this was going on, learn more things and then go back. And almost 8 years have passed since then; my brother and sister have already gone back and we have stayed.

37 Despite the constraints and difficulties women migrant workers face, it has been proved that migration can empower migrant women and can help them to emancipate. There are many cases that show how migration offers women new opportunities including financial independence abroad as well as a better status within their families and communities in the home country. As Nyberg-Sorensen and Guarnizo (2007) show in their study of Colombian and Dominican migrants in Europe, the work of migrant women enables a transformation from their subordinate role as unpaid family worker to a paid one that allows them to provide for their families while living somewhere else. Moreover, migrant women are increasingly being recognised as key actors in the economic transformation of their home countries (through their financial remittances but also since they actively create opportunities by investing their resources (social, skills, knowledge, experiences) in activities and practices for the benefit of their home countries. As experts on migration and development for international organisations stress, "women migrants are becoming agents of economic change" (OSCE, IOM, ILO, 2006).

38 Around half of the 191 million migrants in the world today are women (OSCE, IOM, ILO, 2006). Furthermore, as Nyberg-Sorensen and Guarnizo (2007) state, most labour demand in Europe in recent years has focussed on what are traditionally regarded as feminine activities in the service sector (from domestic activities to caring for children and the elderly). This partially explains why there are a lot more Latin American women migrants in Europe than men. Similarly, using data from the Swiss Federal Statistical Office (FSO), Bolzman et al. (2007) show that in 2004 women represented 64.5% of all Latin American immigrants entering Switzerland. The authors stress that emigration from Latin America is exceptional in this sense because, whereas women on average make up half of all migrants entering Switzerland from other world regions, in Latin America's case this rises to almost two thirds. Following Bolzman et al (2007), the over-representation of Latin American women is linked to the large number of marriages with Swiss citizens or with persons residing in Switzerland, as well as large demand for a female labour force in the service sector.

She went on comparing her motivations for moving to Switzerland between when she first came to study on a more temporary basis, and coming this second time with different expectations. This shows how migration determinants can change over different periods of a migrant's life, and shows that migration is a dynamic process that is based on a migrant's opportunities at a given moment. It is clear from both cases that, beyond its complexities, migration remains a natural and inevitable phenomenon (OSCE, IOM, ILO, 2006). The skilled Colombian stressed:

I came to Switzerland from 1996 to 1997 on an exchange study programme with the university in Colombia and then went back; then I got married. When I came back with my husband, it was different from when I came as a single student; my expectations of living prospects were different.

(Architect and MBA student)

The data on skilled Colombians in Switzerland provides evidence of the complex mixture of motivations for migration, interplay of gender aspects with various migration patterns that include circular migration, temporary return to the country of origin, and permanent stay. This confirms, as international organisations have stated (OSCE, IOM, ILO, 2006), that patterns of migration are becoming increasingly complex “with temporary, circular migration and permanent migration showing an emerging paradigm of international labour mobility” (p. iv). The experiences of skilled Colombians show particular arrangements within new dimensions of trans-national family life in which “long-distance parenthood” connecting “fractured families” and “geographically dispersed homes” (Vertovec, 2004a) are only some of the new migrants' family experiences, involving significant emotional sacrifices. One respondent said:

After a first short stay in Switzerland due to my husband's scientific career, I went back to Colombia with my children to finish my studies there and then came back to Switzerland. During this time my husband stayed here.

(Senior postdoc researcher in Immunology at the UNIL)

The third most important reason for skilled Colombians migrating to Switzerland is labour mobility, but there are relatively few cases of this. Labour mobility includes skilled professionals being posted abroad by multinationals or professional relocation within multinational companies. Labour mobility is facilitated by the social networks and professional and social contacts that Colombians have previously established and to a lesser extent by family contacts in the destination country. The survey shows here as well – as mentioned – that social networks and the social capital drawn from such networks can be decisive in the migration process, both for those moving for job reasons and for those searching for scientific and research challenges. Respondents gave the following answers:

I came to Switzerland by pure chance: some of my sister's friends in the field of biology helped me with contacts, and a Spanish professor gave me the opportunity to come to his lab; he told me about the Swiss ESKAS³⁹ scholarships. I went back to Colombia and prepared all the papers. As I had already been accepted by a lab in Geneva, everything was easier.
(Microbiologist and researcher in Immunology at the Bern University Hospital)

I came directly from Colombia to Switzerland; I was mainly seeking better training and educational opportunities. The level of molecular biology is better here than it is in Colombia; and I also wanted to offer my sons better opportunities in another country. I studied at the Univalle and worked with an important researcher on malaria that had contacts in Switzerland.
(Molecular Biologist and Project Manager in the food industry in Vevey)

Finally, socio-economic reasons are also decisive factors in the migration process. In their search for better opportunities both professionally and personally, most respondents recognised some important *pull factors* like the opportunities for training and/or pursuing a scientific career within an excellent academic and research environment, as well as the quality of life, stability and security that Switzerland has to offer. Similarly, key push factors at play include the lack of opportunities in Colombia, and violence and insecurity. One skilled Colombian said:

I basically left Colombia to look for new opportunities and work possibilities; it was actually a mix of need and opportunity, and as a result, a search for some new alternatives. The internal structural problems in Colombia were the main reason.
(Scientist in Chemical Sciences and Engineering at EPFL)

Furthermore, some respondents mentioned bilateral cooperation, scholarship and scientific exchange programmes as decisive factors in their decision to leave. Indeed, scholarship programmes from both Swiss and Colombian institutions have played a key role in opening up possibilities for Colombians to pursue their studies abroad. One third of the respondents had scholarships to pursue their studies and research; other respondents received a scholarship after arriving in Switzerland. The most common scholarships and funding institutions and mechanisms that have supported Colombians are: the International PhD Programme from the Swiss National Science Foundation (SNF), the EPFL-SDC Fund,⁴⁰ the

39 Swiss Federal Commission for Scholarships for Foreign Students (ESKAS on its German acronym).

40 Cofinanced by the EPFL and the Swiss Agency for Development and Cooperation (SDC), the EPFL-SDC Fund is one of the main programmes managed by the unit Cooperation@epfl at the EPFL. It covers interdisciplinary, medium-sized, top level scientific research projects who have acknowledged public utility for emerging and developing countries, implemented through North-South partnerships (<<http://cooperation.epfl.ch>>).

ICETEX,⁴¹ ESKAS, Colfuturo, and Colciencias. There are also scholarships from the French and the German governments, from the Max Planck Society, or the Marie Heim-Vögtlin Programme from the Swiss SNF. Colombians who had been granted scholarships mentioned:

I learned about the existing scholarships and about EPFL through an EPFL professor who went to Colombia, so I sent an application and was accepted. I always wanted to learn more and see new cultures, but for my socio-economic situation made it difficult, so my only choice was to receive a scholarship.

(Supply Chain Project Manager in the packaging industry in Prilly)

I came (back) to Switzerland in 1995. I did the equivalent of my diploma at the UNIL and started a PhD thanks to the Marie Heim-Vögtlin Programme – a special scholarship from the Swiss Confederation for women, who like me, were taking a professional break to be with their children. It financed my PhD.

(Senior postdoc researcher in Immunology at the UNIL)

Many Colombians who came through one of these scholarship programmes or through scientific exchanges were offered a job after finishing their studies/research in Switzerland and they have not been back to Colombia as most had originally intended. Further research should find out to what extent these bilateral programmes encourage knowledge circulation and the opening of opportunities for skilled persons in developing countries without undermining the efforts in countries of origin to encourage capacity building and development and strengthen human capital. Given that this tendency seems to be continuing, initiatives that encourage the virtual or physical return of skilled migrants and the capitalization of their resources for the benefit of the country of origin are becoming more and more essential. Skilled Colombians who had been granted scholarships explained:

I studied at the National University in Bogotá where there were many strikes. I looked for opportunities to finish my studies abroad and got funding from a mix of sources – mainly my parents and ICETEX – to go to England for 3 years. After returning to Colombia and then to England again to do a PhD, my PhD director put me in contact with the ETHZ,⁴² where one of the most important professors in the field of organic chemistry accepted me for postdoc research.

(Postdoc in Organic Chemistry, working in biomedical research and pharmaceutical industry in Basel)

41 The Colombian Institute for Educational Loans and Technical Studies Abroad (ICETEX on its Spanish acronym) is the Colombian government body in charge of managing scholarships in international co-operation provided by the governments of other countries and international bodies.

42 Swiss Federal Institute of Technology in Zurich (<<http://www.ethz.ch>>).

In 2000 I got a fellowship with the graduate school at the EPFL. I did one year of technical courses and then had the opportunity to start my PhD in 2002, which I completed in 2005. Right after that, in 2006, I joined IDIAP.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

Although the Colombian case study shows that scientific exchanges programmes have played an important role in encouraging scientific and professional mobility, it is also true that these exchanges are essentially down to the individual motivations and efforts of the scientists and professionals themselves. In fact, the constant professional contacts and scientific exchanges between some members of the Colombian scientific diaspora in Switzerland and their counterparts in the country of origin have played a significant role in stimulating the ongoing exchanges. One third of the Colombian respondents mentioned senior researchers who are key members of the Colombian scientific diaspora in Switzerland as their principal source of information about the scholarship programmes or the possibilities of obtaining an assistantship and a PhD place. These scientists were also founding members of the Association of Colombian Researchers in Switzerland (the ACIS) in 1992, and they continue to play an important role in its promotion to this day. The interviews revealed that at least 20 PhD students had come to Switzerland during the last decade as a result of the individual efforts of these senior researchers to encourage collaboration and exchanges with Colombia without any systematic institutional support. Of those 20, some have gone back, some have moved to other countries, and some have stayed in Switzerland, most of them on a permanent basis. Skilled Colombians said:

A Colombian professor at EPFL had links with the Univalle and other universities in Bogotá. He needed assistants for his courses, so he told us about the existing scholarships stressing the fact that the scholarships were not granted most of the time due to a lack of information about them. He encouraged us to take advantage of them, so two friends and I applied, and the three of us were accepted.

(Engineer in Electronics, SAP consultant in Logistics working in Geneva)

I came thanks to an EPFL scientist; I met him through his cousin, established contact with him and found out that we had scientific affinities – that was my entry point. After his collaboration with the Univalle where I studied, I had more links with him. When I applied for a scholarship, he was my source of information about EPFL and Switzerland.

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

2.2.2 Migration Paths

If one regards international mobility as inherent to the scientific world while recognising that the scientists' nomadic lifestyle benefits science (Meyer et al., 2001), it becomes normal to see skilled Colombian's migration paths include

time spent in other countries before they finally settle in Switzerland or abroad. One Colombian scientist mentioned categorically:

Exposure to the international arena is the basis for scientific and personal advancement, as well as for the development of scientific capacities in Colombia.
(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

At different times, scientific, student and labour mobility are important elements in the experiences of skilled Colombian migrants as well. In this context, most Colombians interviewed had spent time in other countries for educational and/or professional reasons before they came to Switzerland. The different migratory routes the respondents had followed included such traditional destinations as the United States or the United Kingdom as well as other European countries like France, Germany, Spain and even Russia, Israel or Latin American countries such as Brazil, Chile or Mexico. A few respondents stated that they had returned to Colombia temporarily but had later come back to Switzerland (in some cases passing through a third country), especially to accept new professional or training opportunities that were better than those offered in their country of origin and, in some cases, for family reasons too. The testimonies of respondents give vivid proof of this:

I studied in Bogotá at the Lycée Francaise, where I got a scholarship to continue my studies in France; I stayed there for 4 years. Then I moved to London for 1 year, and from there I got this position at EPFL through a job search system of an Engineers Association I was member of.
(PhD student in Mathematics at EPFL)

I left Colombia for the University of California in LA on a short internship. I met a Brazilian scientist there and he invited me to go to Brazil as part of a project; I went and completed a Masters. From Brazil I went back to the USA to start a PhD. At a congress in Mexico I met a German scientist with whom I submitted a research proposal that was accepted – and that's why I'm here. I have to say that Brazil was where I experienced my scientific awakening.
(PhD student in Geosciences and Geochemistry at the University of Bern)

Skilled migrants' paths and routes including temporary return to the homeland show that migration is a dynamic process in which international circulation provides experiences, language skills and multicultural work practice of significant benefit to the skilled human resources. Respondents also mentioned that the level and reputation of science in Switzerland opened unique professional opportunities. The better quality of life in general was an additional motivation to return to or stay in Switzerland. The Colombian case study shows that in many cases, there is a complex combination of personal reasons and professional goals behind professional and scientific mobility. It also shows that unlike unskilled workers, skilled migrants can move more easily and have more choices.

I got a grant to study in Israel for two years. I met people from the University of Geneva there and through these contacts I was accepted to do my PhD in Geneva, where I stayed for 5 years. Then I left to go to the University of California where I stayed for another 5 years. I then had the opportunity to go back to Colombia since my position at the university there had been held for me all those years, but I was more concerned about knowing more and improving my scientific level. It was an overall decision based not on one single element but various ones such as work utility, private life, professional life, good salary, Swiss quality of life... (Scientist in Neurosciences, working for a pharmaceutical company in Basel)

In the scientific world, mobility and scientific exchanges are very important. I left Colombia to do postdoc research in parasitology at the University of New York. From there I came to Lausanne to test some new technology. My three-month research visit here ended with publications at the highest scientific level. I then had a choice of going back to Colombia or accepting an offer with career prospects here, with an independent programme on Tumour Immunology (cancer) and I stayed. It was an easy decision because it was a very good offer. (Medical doctor, professor and researcher in Immunology at the UNIL)

2.2.3 Daily Life Experiences, Living and Working Conditions

The daily professional activities of Colombian scientists, postdoc researchers and PhD students in Switzerland are mostly related to research, teaching and training, and capitalising on research. Accordingly, their main activities involve supervising research, interacting with other scientists and PhD students, searching for literature and funding opportunities, drafting publications and writing scientific articles, participating in conferences and seminars, teaching, designing and implementing projects. For Colombian staff working for international organisations their daily professional activities are mostly related to training and capacity-building; awareness-raising issues; participating in conferences and seminars; policy advice; liaison and networking; research and publication; coordination of regional centres; and designing and developing educational training programmes.

For Colombian managers and consultants working in the private sector, the daily professional activities include evaluation, establishment and negotiation of strategic alliances; making recommendations on markets and opportunities; research; design and delivery of products; customer support; management and supervision of research and projects; evaluation and/or implementation of projects; development of projects; training courses; writing reports; audits and quality management; linking up with business enterprises; and advising business on diverse issues. The daily professional activities for Colombians working in government institutions include organising, planning and implementing training for personal; and networking and building relations with different partners.

One third of respondents have work that includes regular exchanges with researchers and scientists in the country of origin. All of these are scientists,

postdoc researchers and PhD students in research and academic institutions. Some respondents asserted the following:

My daily scientific activities involve Colombia. I have research projects there and encourage student exchanges, and joint publications with Colombian partners and colleagues. I have constant scientific cooperation with Colombia.

(Scientist in Chemical Sciences and Engineering at EPFL)

I have been here for 30 years and in the second year I already had joint projects with Colombia. I have continuously encouraged student and researcher exchanges, visits, and courses. I have 29 years of projects with Colombia behind me.

(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

PhD students are mainly taken up with their research, but they do develop other projects at the same time, some of which involve research groups in different countries. This gives some impression of the breadth of their collaboration experiences as well as their network of contacts, thereby increasing the overall value of their work, skills and experiences. One respondent stated:

I dedicate most of my time to my PhD research but in parallel I have other projects, in Germany, Italy, Colombia and Canada; Brazil is also involved in all of them.

(PhD student in Geosciences and Geochemistry at the University of Bern)

The interviews uncovered interesting information about skilled Colombians' first experiences in Switzerland, as well as the impact of their legal and occupational status on their social and economic situation. This analysis reveals contrasting first experiences that were mainly related to their migration determinants. Those who came on scholarships and work contracts generally had more positive first experiences in Switzerland than those who moved due to family regrouping or marriage or for socio-economic reasons. The qualified Colombian migrants therefore had different first experiences after arriving in their country of destination. The spectrum covers every possibility ranging from very positive and fascinating to very negative situations with continuous obstacles. Around one third of respondents emphasized the positive elements, one third the negative elements, and one third described their arrival in Switzerland as a mixture of good and bad experiences.

Positive First Experiences

The positive elements the Colombians emphasised were working in an excellent scientific environment, the abundance of resources in the laboratories, the opportunity to see and live in a new culture, the beauty of the landscape, a liking for the Swiss lifestyle, and being well received and accepted by work colleagues. For some Colombians, their first experiences in Switzerland were

fascinating: success, curiosity and opportunity were some of the key words mentioned by respondents in this regard. Respondents explained their first experiences:

A very positive personal attitude combined with my professional success made my first experiences very positive. My professional results after a first three-month stay were spectacular including publications in *Nature*. Since then I have always been in demand.
(Medical doctor, professor and researcher in Immunology at the UNIL)

Some of my first experiences were awesome. The change to having an abundance of resources to work with was enormous; to pass from scarcity to having more than someone could have imagined made a great impression and it motivated me to work even more.
(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

The respondents that emphasized their positive first experiences were especially students who had received scholarships under privileged conditions, those who arrived with contracts for postdoctoral studies, or been accepted on PhD programmes, those who had lived in other countries before coming to Switzerland, those who started work directly on arrival, and the few who knew the language. One Colombian who was raised in Switzerland said:

I came when I was a kid and coming to Switzerland was a huge change in my life; a very abrupt and extraordinary change. For someone like me who had never left his country, always lived in a modest surrounding with strong social links and always spoken the same language, it was quite a shock. There were lots of opportunities and materials at school here, with a huge variety of possible activities and ease of travel. It opened up the world for me.
(International official at the United Nations in Geneva)

Other skilled Colombians mentioned:

For me it has not been difficult to settle in Switzerland mainly due to the fact that I had been already many years living abroad and used to be within different cultures. Additionally, the French part of Switzerland is a lot more “Latin” than the North of Germany, where I used to live, thus the adaptation was easier. Moreover, I had many friends through my husband who is Swiss and because I used to come here regularly.
(Scientist in Microbiology at EPFL)

There are cultural differences that aren’t always easy to surmount but professionally speaking my first experiences were good, I found a good job a few months after I came, so everything was pretty much positive.
(Architect and MBA student)

As mentioned above, the Colombian diaspora community has created a very strong social network that has facilitated the first experiences of many in Switzerland, especially at the EPFL and the UNIL. Respondents mentioned that it was largely thanks to the ACIS that they had been able to establish first con-

tacts and it had facilitated their first experiences here. Once more, as observed previously, skilled Colombians took advantage of the benefits of established networks (Bruggeman, 2008).

When I came to Switzerland I became part of a group that was very welcomed internally at the EPFL, so the first experiences upon arrival were positive; we all knew each other. There were many Colombians who created a social and friendship network with very strong kinship links; this helped us all a lot to feel well and to support each other. Additionally we were always organising lots of events.

(Engineer in Electronics, Consultant SAP in Logistics working in Geneva)

It was an easy transition from Colombia to Switzerland given the fact that several people I knew from Colombia were living here. This gave me an introduction to the Swiss lifestyle and helped me get an apartment. Also, I was enrolled in a programme for international students so most of the people around me were in the same situation, trying to build a life for themselves; and everybody helped each other out.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

The international nature of the academic environment and in some particular areas of industry such as pharmaceuticals has helped some Colombians to adapt. For some respondents working in industry, their high-level professional position and the multicultural and international professional environments have certainly helped. They never experienced any difficulties, and even the language was not a barrier for them since they knew English and did not need to learn the local languages as their workplaces worked in English. One respondent stressed:

I feel very comfortable here because there is nothing that makes me feel excluded despite the fact that I don't speak the language. The city of Basel is absolutely cosmopolitan and people here accept that the city lives of the pharmaceutical companies and these are international. I have never felt the necessity to speak German; I speak French and English at work.

(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

Finally, some Colombians spoke of the importance of links with the local community through their partners' families and the support and help they offered to overcome some of the difficulties on arrival. One respondent said:

My partner's family was ready to lend a hand, and that was very helpful. Their support made things easier.

(PhD student in Geology at the University of Bern)

Negative First Experiences

In contrast, the initial experiences in Switzerland of most respondents who came to study or train and did not have scholarships, or those who came without a job contract, were not easy. The main difficulties these qualified Colom-

bians faced included adapting to a new culture (and on occasions to a new life as well), adapting to the weather, adapting to a new rhythm and intensity of work, the difficulty of making friends and being far away from their families, the difficulty of obtaining a work permit, and in some cases sexual or racial discrimination. An additional obstacle for skilled Colombians is the fact that their qualifications are not always recognised. Some Colombians said:

I arrived 12 years ago with a scholarship of Colciencias. (However) some first experiences were very traumatic. My diploma was not recognized and I had to do admission exams; that was very hard for me. In addition I had to follow my courses, do research and learn French, all at the same time. Those first experiences were frankly very hard.

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

I experienced the stereotype of Latin American women without education when I was once treated as somebody who lacked even the most basic education.

(Senior postdoc researcher in Immunology at the UNIL)

For many the language was the main barrier. Skilled Colombians had realised that learning the local language is the key to academic, professional and social integration, and most had learned French quickly. Some of them benefited from intensive six-month courses that were part of their scholarship programmes. But for respondents who had to learn German and study the Swiss-German dialect, the difficulty was even greater. One PhD student said:

I couldn't speak German and at the beginning my communication with people was very basic; that was hard. Fortunately I did have some friends in Geneva who spoke Spanish and that helped my socialization and adaptation.

(PhD student in Geosciences and Geochemistry at the University of Bern)

Furthermore, a few respondents – all women – said that they felt discriminated against at first, both socially and professionally, but that this had changed once they had learned the language or had become integrated in the professional sense. This shows how skilled Colombian women face added difficulties in their endeavours to integrate themselves into professional life and/or within study programmes. As Riaño and Baghdadi (2007) show in their study on skilled immigrants from countries outside the European Union, women encounter significant difficulties when trying to transfer their educational resources across international borders and achieve professional integration appropriate to their skills level. Skilled Colombian women said:

When you come from a non-European country, especially for women, it is difficult to get people to believe that you are capable of doing things, even more so in architecture, which is mainly a male field.

(Architect and MBA student)

When I moved to Zurich I was confronted with many difficulties. I felt discriminated against at the ETHZ because I was a woman and from a developing country. The Professor responsible of my education programme told me that it was a school of engineers, and that the programme would be very difficult for a woman; he couldn't see me making it. He suggested I should find myself a Swiss husband.

(Researcher and lecturer in Geography at the University of Bern)

A further respondent explained how she experienced huge stress at the beginning of her PhD because she felt the prejudice of people showing their scepticism about her abilities. She stated:

I had a lot of stress at the beginning; I felt I had to work a lot more than 100% on the project because I am Colombian and I am a woman, so I had to show the others that I was able to do things well.

(PhD student in Geology at the University of Bern)

Some of those interviewed mentioned the hard work in a very demanding professional and/or scientific environment as being one of the main obstacles. Friction and a bad atmosphere in the laboratory, depression and, in one case, sexual harassment were other reported difficulties. The interviewees overcame these difficulties by working hard, showing determination, learning the language and in some cases seeking professional help. In many cases, the quality of life offered by Switzerland compensated many respondents for the long working hours, meaning that, overall, they gave a positive assessment of their daily life.

When I came to Zurich to start a postdoc, nobody picked me up or guided me and the reception I got was very cold. However I received a very good logistical support in terms of finding an apartment for example. The main difficulties I experienced were in scientific terms. I had to work hard and long hours including weekends to achieve a constant excellent scientific production.

(Postdoc in Organic Chemistry, working in biomedical research in the pharmaceutical industry in Basel)

I do more here in my field of work and my current position that I would do in Colombia. There, in the same position I would have more free time, and in some aspects my life as professor would be better there: a big house with employees. But this is being paid in a different way because here I have more freedom and security, the education of my children is better, I live in a small, traffic-free village that nevertheless has all the possibilities that a big city could offer.

(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

For some Colombians interviewees, their arrival in Switzerland brought a mixture of good and bad experiences. We have the paradigmatic case of one Colombian woman scientist who had a two-sided experience: first a very positive experience upon her arrival in Lausanne and after, and in contrast, a negative

experience on arriving in Zurich, showing that Switzerland can offer very different environments for qualified migrants, and also showing how crucial it is to speak the language.

I lived in Lausanne for 2 years and my experiences were very positive; I learned French easily and people accepted my skills. When I moved to Zurich I started to be confronted by many difficulties. At ETHZ my diploma was not recognised whereas they did recognise it at the EPFL. I also felt discriminated against in society because of my racial origins; it was harder to feel accepted in German-speaking Switzerland.

She went on to compare her experience in Switzerland with the one she had in Canada, where she had lived before. She said:

My ethnicity in Canada was something positive due to the principle of visible minorities and diversities; the opposite occur here. There they first see your qualifications and then your physical aspect. Here I always had to prove that I was better than people thought. I worked very hard to study German alongside my Diploma and even followed a course to understand the dialect. When I learned the language people started treating me differently.
(Researcher and lecturer in Geography at the University of Bern)

Personal Identity in Question

Some respondents raised the issue of being confused about their personal identity, their *individual uniqueness* (Jenkins, 2008), and their feeling of belonging, after a hard first experience upon their arrival to Switzerland.⁴³ As Jenkins argues, “While many of us are able to take identity for granted, [...] there are occasions when identity becomes an issue” (p. 1). He stresses that the process of identification both as individuals and as members of a group often has an emotional charge attached to it. Some skilled Colombians experienced this. It is worth mentioning that those respondents who stated that they felt an emotional charge during their first experiences in the host country were all women. Skilled Colombian women said:

My first experiences were not easy. I was pregnant with my first child and did not speak German, plus I decided to change my name, all of which added up to a big identity crisis. It ended when I recovered my last name.
(Senior Economic Counsellor and MBA student in Geneva)

43 Jenkins (2008) describes identity as the human capacity to know “who is who,” which involves knowing who we are, knowing who others are, their knowing who we are, us knowing who they think we are, and so on. The process of identification implies a multi-dimensional classification or mapping of the human world and our places in it, both as individuals and as members of a group (p. 5). In reference to the conceptual nexus “identities-borders-orders” as a feature of migrants’ trans-nationalism, Vertovec (2004a) observes that identities concern “matters of membership, belonging, loyalty and moral and political values” (p. 37).

I had good first experiences. I find it easy to integrate myself into new cultural and social environments. I took it as an intellectual and personal challenge. However, I had some emotional negative feelings but I decided to assume that I was in Switzerland and that I had to see everything in a positive manner.

(Molecular Biologist and Project Manager in the food industry in Vevey)

Two Colombian PhD students explained how their process of identification with the host country was influenced by their change of status. While they came to Switzerland (for different reasons: one for personal reasons, the other one on a language study course), they found upon arrival that migration meant a loss of status in professional terms (Riaño and Baghdadi, 2007), since they had developed professional experience in their home country and in Switzerland they were not allowed to work. However, when they chose to start a PhD, the change of status (from *foreigner* to *student*) was a positive boost for their sense of self. These skilled Colombian women said:

When I was in the position to start my PhD, I no longer felt like a foreigner but I started to feel like a student.

(PhD student in Soil Physics at the University of Bern)

Initially it was hard to be in the Swiss German part due to the language; now as a student I feel to have a safer status and I feel more relaxed than before about being a foreigner.

(PhD student in Geology at the University of Bern)

Another example is that of a Colombian woman who came to Switzerland in 1975 after marrying a Swiss citizen. She stressed the hard moments she lived through when she received a Swiss passport (which at that time was done immediately on arrival in view of her being married to a Swiss citizen) and lost her Colombian nationality,⁴⁴ and her difficulties with the language. In this case, as in others, we can also observe how once a migrant decides to stay definitively, his or her willingness to integrate is often greater, facilitating the identification process with his/her new identity.

Right upon my arrival I became Swiss through marriage and when I received my passport I felt completely deprived of my roots and background; administratively, neither my family name nor my place of origin nor my place of birth figured on my passport. I felt confused

44 As Faist and Gerdes (2008) explain, in the past, women used to acquire their husbands' citizenship automatically after marriage, thus their citizenship status depended entirely on that of their husbands. Recently, the right to retain their own citizenship, independently of their husbands, has been recognised by the citizenship laws of an increasing number of countries, including Switzerland. In the particular case of Switzerland, up until 1991, foreign women automatically acquired Swiss citizenship by marrying a Swiss citizen. Since 1992, foreign men and women who marry a Swiss citizen need to live in the country for at least 5 years and be married for at least three years before they can apply for Swiss citizenship.

about my own identity. I felt the distance that separated me from my family and my country, and that hurt. The language barrier kept me quite isolated at the beginning, but when we finally decided to stay for good, I was able to integrate quite fast after having followed French courses.

(Educational psychologist working in a government institution in Lausanne)

Balancing Work and Family

As far as gender roles are concerned, particularly with regard to combining one's private and professional lives, most of the interviewed women with children find it a major challenge to balance their responsibilities as mothers and as professionals or scientists in Switzerland. They expressed their disagreement with the role that society gives mothers in this country in the sense that it is assumed that they will stay at home to look after their children. Additionally, they stressed their professional sacrifices to raise children and have a family in Switzerland, while in Colombia the system is made so that everybody can work. Besides social expectations that discourage mothers from continuing their professional activities, Riaño and Baghdadi (2007) mention that "the prevailing value that good mothers stay at home has generated a lack of institutional facilities for childcare." Some additional difficulties faced by qualified migrants with small children who try to combine their private and professional lives are that school timetables force one of the parents to stay at home; their dependence on external childcare since their relatives live abroad; and the limited number of places at day-care facilities (mostly a shortage of them), which are in addition very pricey. To overcome these difficulties, some women respondents had to bring members of their families from Colombia to take care of their children for a while and others had to take a work break because they couldn't find a place at day-care facilities. One respondent stressed: "I had to bring my mother-in-law to Switzerland for two months to help me with the children until I finally got a day-care place." In this regard, other Colombian women stated:

Switzerland lives in a big paradox since it is a very developed country but its society is still very conservative in its mentality towards working mothers – women are supposed to stay at home taking care of their children. Day-care places are very limited and pricey. I stopped my job for one year because I did not have any day-care place for my son. Now I work 60% or 3 days a week.

(Engineer in Electronics, SAP consultant in Logistics working in Geneva)

The Swiss system is not designed for working mothers, but instead discourages them in their personal decisions of wanting to do both tasks, unlike Colombia. It is rare that you find here women that want to pursue a career and have children. If you get married and have children, you are staying at home.

(Senior Economic Counsellor and MBA student in Geneva)

I have fought a lot to be able to reconcile my life as a mother and my life as professional woman. [...] When my daughter was 2, I finally got a place for her at the university day-care centre and that facilitated my professional work. The great difficulty was to establish yourself academically in Switzerland you have to invest 100% of your time, and if you are a mother and work only part-time, you don't have enough time to publish.

(Researcher and lecturer in Geography at the University of Bern)

In the same tone, one Colombian (male) stressed: "Despite the fact that Latin countries have a reputation for machismo, Switzerland is not very different." Another Colombian mentioned the high representation of Colombian women in the government as an indicator of it being socially more advanced than Switzerland with regard to gender issues when asked whether she saw any differences between her country of origin and Switzerland concerning the reconciliation of family and professional responsibilities. She declared:

I see enormous differences, which for me as a woman is basically the toughest part. In Colombia, the system is made for everybody to work. In the Colombian government about a year ago, seven out of thirteen ministries were headed by women. From the school system all the way to day care nannies, it is made so that women can go out. Here on the contrary the school system is designed so that women stay at home and for me that's very shocking.

(Architect and MBA student)

Moreover, the lack of family back-up to help working couples care for their children and the lack of domestic help with the housework are two additional elements that influence the way people combine private and professional lives in Switzerland; this is in contrast to the situation in Colombia. Nevertheless, it is important to mention that sharing the housework and family tasks is common practice among qualified Colombians in Switzerland, while this practice is not so widespread in Colombia. Some women stressed the fact that the support and help of their partners or husbands has been essential in their efforts to combine their professional and private lives. Many Colombians overcome the lack of family backup by encouraging kinship links with the community and neighbourhood.

Becoming a mother and balancing work and family was quite a hard task. At the beginning I tried to overcome the obstacles by sheer determination. I developed links with a supportive community which helped replace the family links.

(Senior Economic Counsellor and MBA student in Geneva)

Here the daily housework is shared more. Men are ready to help, while in Colombia "machismo" is common and women are supposed to do the housework. My husband (Colombian) encourages my decision to work and frankly we share the housework well.

(Engineer in Electronics, SAP consultant in Logistics working in Geneva)

I have a nanny and a husband who helps 50%. I also have a day-care place that I can totally trust. I can combine work and family because I trust those who take care of my children and

can count on the support of my partner. Since my work requires more than a 100% commitment, it would be impossible without their help, since we have no family here.
(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

Leisure Activities and Swiss Quality of Life

Doing outdoor activities and sports as well as participating in cultural activities are things that many skilled Colombians find important in their private lives. Respondents mentioned singing; reading; playing an instrument; performing theatre; practicing yoga, ballet, biking; going to the cinema; being a member of a cooking club or a sports club or association; supporting NGOs and civil society associations; hanging out with friends and learning foreign languages among the activities they did in their own time. The interviews revealed how some respondents participate actively in various charitable activities. Some also often get together with their Colombian friends and relatives at the weekend.

I practice Nordic walking with a group of Colombians, and also yoga. I also participate in an association that fights against breast cancer; I am actually president of the association in the French-speaking part of Switzerland, and a member of the association at European level. I really enjoy doing outdoor activities with my friends and being close to nature.
(Molecular Biologist and Project Manager in the food industry in Vevey)

The respect that is shown for one's free time, one's family and private life in Swiss working culture is a positive value that is recognised by the respondents. The flexibility offered by academic life and the possibility of part-time jobs are other elements that make it easier to combine one's private and professional lives. Respondents mentioned:

When we decided to have a child, I decided to go down from 100% job to a 50% but this was not accepted at my former job and I resigned. Now, I work 60%, 3 days a week, and I am with my son 2 days a week. My husband takes my son to day care when I work and he picks him up too.
(Engineer in Electronics, SAP consultant in Logistics working in Geneva)

I admire and respect how the issue of the balance between private life and professional life is handled and considered here. The system helps to integrate both – it allowed me to be responsible for my own professional and personal development. The free time outside work is very much respected.
(Molecular Biologist and Project Manager in the food industry in Vevey)

Other Colombians highlighted the fact that the Swiss system provides more advantages and possibilities to combine private and professional responsibilities than the Colombian system, in which they find it very hard to reconcile both.

In Colombia I had to work twice as hard to achieve the same goals; I had no time there to do anything other than work. Here everything is more organised and there I had to take care of

jobs I wasn't supposed to do such as secretarial or as a receptionist, while here everybody does his own job.

(PhD Student in Basic Sciences at the UNIL)

In Colombia, the socio-cultural environment limits your possibilities to give time to your personal development. There is a significant amount of poverty and thus it is more competitive than here if you want to reach a good academic or professional position, and then you have to work hard so you don't lose what you have achieved.

(Supply Chain Project Manager in the packaging industry in Prilly)

However, it is also observed that many scientists and professionals in senior positions work long hours every week and that they have little time left for family life. Many stressed their reduced time to do other personal activities besides work and take care of their family responsibilities. The responses thus show contrasting experiences: while many Colombians cite having a family – especially small children – as the reason they have no time for other personal activities outside work, others mentioned that because they don't have a family, they spend more time at work and therefore don't have free time for other activities.

Contacts with Other National Communities and Bi-national Couples

The interviews revealed that Colombians foster contacts with other national communities, with the local community, and with the Colombian community, thereby strengthening their social capital. Many respondents, due to the nature of their work, have contacts with international groups and various different nationalities from different parts of the world, while in their private life they have contacts with the local community or the international community. Colombians said:

I have contacts with South Americans, Africans and people from lots of different countries. I have many contacts with international groups because the NGOs and civil society associations come from all over the world. These are mainly professional contacts. I know lots of Swiss people too, as I was brought up here in Swiss schools.

(International official at the United Nations in Geneva)

Most of my contacts are with the international community, and less with the local community and Colombians, mainly because of my work environment. I have a few Swiss friends and mostly Americans because my wife is American and has a big network of contacts. We both have Swiss nationality, but we spend most of our time with the international community.

(Postdoc in Organic Chemistry, working in biomedical research and the pharmaceutical industry in Basel)

Some respondents raised the issue of the Swiss intercultural/international social environment reflected by their social networks. One respondent, who lives in Geneva, declared:

I have quite a few English friends and Swiss friends. I have a well-established network of people; many of my friends are foreigners from all over the world. I guess it is because Switzerland is very international. I do not know anybody who is 100% Swiss and married to a Swiss-Swiss.

She went on to highlight the fact that, despite her broad palette of international contacts, she feels different when she meets Colombians:

When I meet Colombians, I feel a different kind of closeness.
(Architect and MBA student)

This feeling, however, is not shared among all respondents since some of them stressed the fact that they wouldn't meet up with Colombians just because of common nationality or culture, but only if they had the same interests or common activities. It would be interesting to analyse to what extent being part of a bi-national couple (with one national from the host country) means that skilled migrants would have more links to the local people and thereby contribute to their integration in the host country. There is much conceptual and empirical work that remains to be done with regard to the significance of bi-national couples. A skilled Colombian, who has lived in Switzerland for the past 7 years and is married to a Swiss woman said:

I have lots of contacts with local people because my wife is Swiss, and this has helped me to integrate better here than typical Colombians.
(Supply Chain Project Manager in the packaging industry in Prilly)

In his study on international students and skilled migrants in bi-national couples in Switzerland, Ossipow (2004) observes that how well a bi-national couple fits in varies according to the migrants' pre-migratory context, the conditions of their migration and the reception in Switzerland, and highlights that there are great differences for each national group.⁴⁵ He examines how students' mobility and bi-national marriages influence the relations between the country of origin and the country of residence from a perspective of "skills circulation" in which diasporas are seen as having the potential for positive investment in the country of origin. Interestingly, Ossipow concludes that the migration paths of students in bi-national couples (composed of one Swiss partner) very rarely end up returning to the country of origin. The same applies to skilled Colombians in Switzerland living in bi-national couples, having left their country to study and/or train.

45 Ossipow's (2004) piece is based on research carried out from 1996 to 1999 on bi-national couples. The couples are made up of one Swiss partner and one foreign partner who came to Switzerland from Cameroon, the Democratic Republic of Congo, Morocco, Poland and Turkey with the aim of studying and/or training.

2.2.4 Integration in the Host Country

The research provided evidence of the fact that for skilled Colombians, the institutional and professional contacts, as well as social relationships, are decisive for their integration in the host country. For those who have come for the purpose of studying or for scientific training and advancement, as well as the few who come through job contracts, the crucial elements for successful integration were already in place. While many Colombians were able to make use of the social capital they brought with them upon arrival in the host country, others needed some time to access new social and cultural resources that could be decisive for their integration, either through the development of professional activity, by completing a study programme, mastering the language, or participating in not-for-profit activities. As such, the *social networks*⁴⁶ (Vertovec, 2003; Bruggeman, 2008) and *social capital*⁴⁷ (Bourdieu, 1986) derived from such networks are essential elements that boost their integration into the host country. As previously mentioned, those that had contacts with the ACIS members and its not-for-profit activities were able to take advantage of the collective support of this type of association, benefiting from the wide and valuable set of *network benefits* (Bruggeman, 2008). As Riaño and Baghdadi (2007) argue, migrants' involvement in associations may play a decisive role in facilitating integration given the fact that they have "the potential to sustain their access to social resources" (p. 167).⁴⁸

The interviews revealed interesting information regarding skilled migrants' perceptions of their integration in the host country. Most Colombians say they feel comfortable living in Switzerland and consider themselves to be well integrated into Swiss social and/or professional life. Some reasons for this that were mentioned by the qualified Colombians are: being able to communicate

46 Following Vertovec (2003), the social network approach "sees each person as a node linked with others to form a network." Networks are a social construct and as such they are constantly being altered by their members. According to Bruggeman (2008), the pro-sociality of individuals "enables them to specialize in few activities, and renders them dependent on others for their remaining needs and desires to be fulfilled." As such, individuals prefer to affiliate themselves with others in groups and communities of diverse sorts, and are able collectively to support each other.

47 As regards social networks, social capital exists in and is drawn from an individual's web of relationships (Vertovec, 2003). For Bruggeman (2008), social capital is "the smorgasbord of network benefits."

48 Riaño and Baghdadi (2007) address the question of the interaction of class, ethnicity and gender to understand the labour market participation of skilled immigrant women in Switzerland, showing the extent to which they are able to make use of their imported social and cultural capital to gain access to positions in the Swiss labour market appropriate to their skills and experiences. The authors consider this to be central to understanding the social integration of skilled migrants.

in one of the local languages; making friends and spending time with local people; having a job and opportunities in the labour market; contributing to the economic prosperity of the country by working; participating in public events and in local activities; participating in activities as part of Swiss associations and ones at their children's schools; enjoying the Swiss way of life; following Swiss politics; voting; owning a house in Switzerland; etc. In this regard, these are some of the testimonies heard during the interviews:

I feel comfortable at work and at parents' meetings at my children's school. I master the language; I vote. Working and being active have been fundamental to making me feel integrated. (Senior Economic Counsellor and MBA student in Geneva)

I feel well integrated; I speak the language, have Swiss friends, eat Swiss food most of the time and do the same activities as Swiss people like skiing or hiking. (PhD student in Basic Sciences at the UNIL)

I consider myself integrated in the French-speaking part of Switzerland. I feel at home here. After a few weeks in Colombia, I feel I need to go back to Geneva. I have a house, family and a life here. When you feel like you could spend the rest of your life in a place, you are integrated. I started to feel this way five years ago. (Physicist and engineer working at the ITU in Geneva)

When the Colombians were asked how integrated they felt, some of them reflected on the meaning of integration. One respondent said: "The concept of integration varies from one person to the next." Another Colombian said, "To answer if I feel integrated, I first need to clarify what integration means?" One respondent said:

I went through all my schooling here. I feel totally integrated. I coach a Swiss football team and participate in the activities of Swiss associations, but for instance I have never wanted to run for a position in the Swiss government. That's the only way I am perhaps not integrated. (International official at the United Nations in Geneva)

It was observed that skilled Colombians feel that they contribute to the economic success of Switzerland through their jobs and professional activities and, as such, the fact that they have a job makes them feel integrated. Colombians elaborated on this issue:

I do consider myself integrated because I have a job and contribute to the economic prosperity of this country. Furthermore I have friends here and enjoy the Swiss way of life, its culture and outdoor activities. (Engineer in Electronics, SAP consultant in Logistics working in Geneva)

Given the fact that I speak one of the national languages, follow politics, have Swiss friends and that I work for a Swiss institution, and when I publish my work under the name of the Swiss institution, I would say that I consider myself integrated. (Research scientist on brain-computer interfaces at IDIAP Research Institute)

I feel very much integrated because I was the first Latin American woman to be elected to the city council of Lausanne, and the first Latin American to get dual nationality in the canton of Vaud. I was on the city council for 7 years and in the cantonal parliament. I directed the project that developed the first concept for internal training for the entire staff of the cantonal administration (20,000 employees). Also, in 1999 I represented Swiss women in the International Congress of Socialist Women.
(Educational psychologist working for a government institution in Lausanne)

It is worth mentioning that for some skilled Colombians, their active family members (wives, children) have an important role in encouraging and facilitating their integration in the host country. One Colombian mentioned:

My family has helped a lot to make me feel integrated. My wife is very active socially, and we integrated ourselves at a very early stage. She organized a lot of cultural activities where we live; she even created a theatre company. Her social dynamism helped a lot. We have a lot of friends. The fact that my daughters are here and that they are dynamic too also helps.
(Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

A skilled Colombian woman who had already lived in Switzerland for 11 years at the time of the interview, stressed:

I feel integrated here because even if I have a precarious residential status and I am not married to a Swiss, there are other parameters; I have friends and I do activities that make me feel integrated.
(PhD in Biology, researcher in Immunology at the Bern University Hospital)

Trans-national Identity

The increasing research on migrants' trans-nationalism over the last two decades makes it possible to analyse how migrants build and reshape their lives while being simultaneously embedded in two or more societies. Various recent studies on migration that consider the modes of transformation of migrants' lives and families pay attention to how trans-nationalism changes meanings, attitudes and experiences both in the migrants' host country and their country of origin. There is also a change in migrants' identity and meaning of home.⁴⁹ Migrants' lives taking place simultaneously "*here*" and "*there*" allow the creation of forms of identity that reach beyond one particular space, enabling a new trans-national sphere to emerge in which traditional contiguity and face-to-face contact are not dominant (Vertovec, 1999). Following Vertovec (1999), "diasporas' consciousness is marked by dual or multiple identifications" (p. 4);

49 For example, Vertovec (2004a) reviews various literature that addresses the impact of migrants' trans-nationalism particularly in regard to the modes of transformation affecting socio-cultural, political and economic changes.

a sort of parallel living, a “home away from home,” or for instance being Colombian and Swiss simultaneously.

Accordingly, the interviews aimed to find out whether or how migrants might be “*bifocal*” (Vertovec, 2004a) with regard to their social links and personal attitudes. The retention of a *bifocalism* or a sense of a *dual frame of reference* was a remarkable point observed among the majority of skilled Colombians in Switzerland, since in their daily lives they persistently compare their condition in their country of origin “*there*” with their situation in their country of residence “*here*”. It must be stressed that a strong trans-national identity was generally noticed in long-term skilled Colombian migrants and those who have settled permanently in Switzerland. In a recent publication Fibbi and d’Amato (2008) recall, first generation migrants are those who put more energy into maintaining trans-national links (p. 10), as evidence from other studies of trans-nationalism shows (Guarnizo et al., 2003; Portes, 2005; Portes et al., 2005; Vertovec, 2004a, 2004b). In addition, skilled Colombians highlighted their “*feeling of Colombia*,” mentioning the importance of their roots, culture and identity as being independent of their level of integration in the host country. One respondent, who came from Colombia to Switzerland 17 years ago and is married to a Colombian, said:

I feel integrated while remaining a proud Colombian. I naturalised Swiss three years ago, but I am Colombian overall in my culture and roots, despite the fact that I master the language and feel comfortable here.

(Senior postdoc researcher in Immunology at the UNIL)

Another skilled Colombian, who had been in Switzerland for only one year at the time of the interview, but who is married to a Swiss citizen and has plans to stay for good, said:

I feel integrated here, but my family will always be, along with my country, culture and origin, part of my daily life.

(Scientist in Microbiology at EPFL)

As Vertovec (1999) asserts, while some migrants identify more with one society than with the other(s), the majority of migrants seem to maintain more than one identity that bonds them to more than one nation. A skilled Colombian elaborated on this issue stressing:

I feel partially integrated. I am naturalised Swiss and that is an important element of integration. I feel that I have kept a duality. Although I do not go to shows, I am well informed about current events. I participate in society through my professional work at the university and through my research. In the more daily aspects of life, in folklore for instance, I am still Colombian. My position is dual.

(Medical doctor, professor and researcher in Immunology at the UNIL)

A few Colombians mentioned their multiple trans-national links. The testimony of one skilled Colombian woman, who holds dual citizenship (but not Swiss citizenship), provided evidence of her plural identification and loyalties, and her links with her family through communication and mutual visits. She stated:

I am Colombian and Austrian. [...] I have multiple trans-national links since part of my family is in Canada. I am in constant communication by telephone and Internet. We visit each other; every other year I go to Colombia and my family comes also every other year.
(Researcher and lecturer in Geography at the University of Bern)

The trans-national identity of (most) diasporas entails a residence “*here*”, while assuming a solidarity and connection “*there*”. As such, following Vertovec (1999), migrants’ links to other places is what makes being “*here*” different for them, and these links are part of their uniqueness. Furthermore, the mere nature of diasporas enabling specific “transformations of (migrants’) identities, memory, awareness and other forms of consciousness” (p. 5), encourages migrants to connect with others who share the same path and culture. Regarding this point, interestingly, one respondent spoke of her feeling that her positive integration had to do with the fact that she did not miss her home country. This PhD student in Soil Physics at the University of Bern, who had been in Switzerland for 4 years at the time of the interview, said: “If integration means that I can communicate and that I do not miss my country, then I believe that I am integrated here.”

Skilled Migrants’ Residential Status and Dual Citizenship

The study on skilled Colombian migrants reveals how migrants’ identities are influenced by their residential status and citizenship regimes. The empirical evidence shows that skilled Colombians in Switzerland acquire a more stable migrant status with time. This is mostly based on their length of stay, attaining a stable job and, to a lesser extent, marriage to a Swiss citizen. A stable residence permit has been shown to be a significant condition for their being able to settle down as it provides them with the stability and the possibility to think about their mid- to long-term plans. This in turn might encourage their identification with the country of residence and thus their integration and trans-national feeling and identity.

In the Colombian case, the issue of dual citizenship arises, since it became evident that, while the great majority were Colombian citizens when they arrived in Switzerland (only one respondent had dual nationality), the migrant status of respondents changed during their stay and one-third of the Colombians have become naturalised Swiss while still retaining their Colombian nationality.

In fact, first Switzerland and then, more recently, Colombia have adopted tolerant policies with regard to dual citizenship,⁵⁰ as part of their nation-state politics (Faist and Gerdes, 2008), following a worldwide tendency that “reconciles principles of nationality with the trends of multiple identities” (Vertovec, 2004a: 31).⁵¹ In this regard, it is worth examining the extent to which dual citizenship enables or hinders integration in the host country, as well as to what extent it influences migrants’ trans-nationalism. Some recent studies provide answers to the question of whether dual citizenship enables or hinders integration; the answer depends on “both how one defines integration and how one views the mutual relationship between naturalization and integration” (Faist and Gerdes, 2008: 3). Although it depends on the legal framework of the country in which migrants have settled, holding the citizenship of that country in many cases facilitates their integration into the job market, since it bypasses the need for a work permit, decreases administrative obstacles, and provides further advantages. Along with citizenship, these do indeed enhance the possibility of socio-economic integration. Additionally, migrants’ children can also be more easily integrated in countries where dual citizenship is accepted.⁵² As Faist and Gerdes (2008) observe, empirical evidence suggests that dual citizenship may increase political participation and socio-economic opportunities, yet the authors state that there is no evidence providing that dual citizenship contributes to “spirals of non-integration, exclusion and segregation” (p. 12). Riaño and Wastl-Walter (2006) assert that analytical studies of trans-nationalism “have to become more differentiated, looking at the variety of the national contexts and at the influence that different regimes of citizenship have on the constitution of immigrants’ identities” (p. 1709).

Skilled Colombians who are dual citizens perceive that this situation has indeed encouraged them to feel better integrated in Switzerland. Despite their diverse understandings of integration, the majority expressed an opinion that their Swiss naturalisation was an indication of their integration in the host coun-

50 Current Colombian legislation applies the policy of dual nationality, according to which “No Colombian by birth may be deprived of his/her nationality. The status of Colombian nationality is not lost as a consequence of acquiring another nationality” (Article 96 of the Political Constitution, reformed in January 2002). The same is true of Switzerland, which is among the *tolerant* European countries that accept dual citizenship (Faist and Gerdes, 2008). In fact, Swiss law has tolerated dual citizenship of immigrants since the early 1990s.

51 For Faist and Gerdes (2008) the two most important factors explaining the increasing tolerance towards dual citizenship are, firstly, the evolving relationship between individual nation-states and, secondly, the changing relations between citizens and the state.

52 As Faist and Gerdes (2008) assert, empirical evidence suggests that children can be more easily integrated in states accepting dual citizenship, given the fact that the state is likely to encourage such children to develop particular skills related to a trans-national background like bilingualism or interculturality.

try, and many mentioned that this had made it easier for them to get into the job market. As such, the citizenship status has helped skilled Colombians to perceive themselves as full members of the host society. Further studies draw attention to the interplay between citizenship, migrants' trans-national commitments and their involvement in migrants' integration in the host country (Faist 2000, 2007). Concerning migrants' trans-national commitment, as Faist (2007) argues, "it might be safe to assume that migrants' trans-nationalism is fostered by dual citizenship" (p. 17), suggesting that dual citizenship might be considered the political foundation of the trans-national experience, making it possible for migrants to lead multiple lives across borders.⁵³

Skilled Colombian migrant status has also changed in terms of the types of residence permits. In some cases, those who came with a student permit received a B permit once they got a job. Others expect to get the C permit thanks to their length of stay and to having a permanent work position. Respondents said:

I originally came to study German for 6 months. Upon arrival I started to look for opportunities. I got the chance to start my PhD here. First I had a student permit for 6 months; then they offered me this job and the university organised my B permit.
(PhD student in Soil Physics at the University of Bern)

I have been in Switzerland with a B permit since I came 10 years ago; this year I have a stable work position and I hope I will get the C permit.
(Molecular Biologist and Project Manager in the food industry in Vevey)

Besides that, most of the respondents hold a B residence permit, only a few hold a C permit, whereas one holds an L permit.⁵⁴ Moreover, one Colombian scientist said that she had a registered same-sex partnership with a Swiss citizen. Under Swiss law, foreign partners of Swiss citizens are entitled to a residence permit from Swiss immigration authorities. She told us about her experience:

53 On the interplay between dual citizenship and trans-nationalism, dual citizenship might be perceived as a symbolic recognition of trans-national living conditions, such as growing up with different cultural backgrounds, and as such it can encourage integration. Faist (2007) underlines, however, that it should be noted that not all dual citizens are trans-national migrants, as not all trans-national migrants are dual citizens (p. 17).

54 The L permit is a *short-term residence permit*, valid for a maximum of 18 months for further vocational educational or private activities. The B permit is a *year-round renewable residence permit* given to qualified specialists and based on a federal quota system; permits with a maximum four-year span can also be granted. The C Permit is a *permanent residence permit* granted after an uninterrupted 5- or 10-year stay in Switzerland (depending on the country of origin); those in possession of this permit have almost equal rights and opportunities as nationals.

Some private reasons made me come to Switzerland. I have a partner relationship – a registered partnership – and that’s why I got the B permit; we live in the Canton of Zurich. This status has now been accepted at national level, so this year we will register as a federal registered partnership.⁵⁵

This confirms, as Nyberg-Sorensen and Guarnizo (2007) have stated, that migration induced by sexual orientation⁵⁶ creates different forms of relatedness and links that may lead to new family types.

Lack of Integration Feelings

A few respondents revealed their uncertain level of integration and of identification with the country of residence’s *nation state* (Riaño and Wastl-Walter, 2006). Riaño and Wastl-Walter (2006) examine historical changes in the representation of foreigners within official Swiss state discourses and their consequences for the integration of migrants into Swiss society. The authors show that in Switzerland, a country where the high percentage of foreigners is due to citizenship laws that are not based on place of birth but on the principle of blood-based descent as well as on restrictive naturalization practices, migrants may remain foreigners for generations. Therefore, this hinders migrants’ identification with their host countries’ *nation state*, which might have important consequences for their integration in Swiss society and thus for their transnational identity.

There is the example of a Colombian woman researcher in immunology at the Bern University Hospital who had been in Switzerland for 11 years at the time of the interview:

I am integrated into the labour market but only on a temporary basis. I would like to have more stability and to settle down without depending on a working permit but of my own free will. This situation does not let me make any long-term plans, and my decisions are based on a residence permit. [...] Switzerland has not provided me with the conditions that would enable and guarantee my successful integration.

55 In Switzerland, same-sex partnerships can be registered in some cantons, at cantonal level, or at the federal level since 2007 as result of the 2005 referendum in which a partnership law put forward by the federal government was approved. Under this law, the *federal registered partnership* gives couples of the same sex who register their partnership with the government, the same rights as a married couple. *Federal registered partnerships* are recognised throughout Switzerland, whereas cantonal registered partnerships may only be recognised within the cantons that offer *cantonal registered partnerships*. While *federal registered partnerships* entail a change in the registrant’s civil status, a *cantonal registered partnership* does not.

56 Migration caused by sexual orientation refers to that of lesbian, gay and transsexual persons (Nyberg-Sorensen and Guarnizo, 2007).

A further skilled Colombian woman who had been in Switzerland for a total of 14 years in three different periods (1+6+7) at the time of the interview, said:

There are different levels of integration. At the level of communication in daily life with neighbours and work colleagues I am perfectly integrated because I speak the language and can communicate well. I would say that I'm not integrated in the sense of sharing Swiss values and having a national identity with Switzerland, because we are foreigners. Here, unlike the other two countries (Austria and Canada) where we have lived, we know that we are not part of Swiss society, so we do not feel integrated but we do not wish to feel so either. (Researcher and lecturer in Geography at the University of Bern)

A few other respondents consider that they are not integrated into Swiss life. They said they have almost no contact with local people, due to the fact that they are not very sociable or have cut themselves off. Others think that there are some specific areas of life in which they do not feel integrated.

I am tolerant about my environment but I do not feel integrated, at least in the German-speaking part of Switzerland. In the French-speaking part I felt differently. (PhD student in Geology, University of Bern)

I feel fine here but not because Swiss people make me feel fine but due to the system. I do not know any Swiss people; I have no Swiss friends. I think Swiss people are very reserved in respect to the Latinos but in part it was my fault too because I have been very isolated and just tried to relate to people who are closer to my culture. (Researcher and PhD student in Chemical sciences at EPFL and professor in Colombia)

Despite watching the carnival and other cultural events, I don't feel part of that; so in this sense I do not feel integrated here. I can imagine that with the time and due to my children I will have the opportunity to be involved in local activities through the school. (Scientist in Neurosciences, working for a pharmaceutical company in Basel)

2.3 Brain Gain Mechanisms, Social Remittances and other Trans-national Practices

2.3.1 Scientific Diaspora Networks, R&D initiatives and North-South Scientific Collaborations

The project identified three brain gain mechanisms⁵⁷ which have great potential to enforce science and technology, as well as socio-economic development

57 Prior to the execution of the fieldwork, the project team identified these three brain gain mechanisms, based on the fact that in different country case scenarios, they have had a positive impact on development and poverty reduction in the countries of origin through a systematic use of knowledge, experiences and resources (for example, through their participation in the creation of micro-enterprises, employment generation, scientific and technical co-operation, the implementation of community development projects, the creation of scientific and technological centres, attracting investment for research and experimental development, etc.).

in the country of origin by encouraging the transfer of knowledge and other resources from skilled persons abroad to their homeland: 1) scientific diaspora networks⁵⁸ and associations; 2) investment strategies in research and experimental development (R&D);⁵⁹ and 3) North-South scientific collaborations.⁶⁰ All these three brain gain mechanisms involve knowledge transfer, and in the best cases they also involve knowledge circulation.⁶¹

To identify the extent to which these mechanisms and other scientific diasporas' trans-national decentralized practices and initiatives have been used and/or promoted by qualified Colombians in Switzerland, the interviews focussed on the relations between the migrants and their country of origin while also bearing in mind the professional contacts and exchanges these migrants had in Switzerland and internationally. Following Vertovec (2004a), trans-national practices can be referred as "(a set of) sustained long-distance, border crossing connections" (p. 1).

With regard to the first mechanism, we have highlighted Colombia as a case in point for the creation of *scientific diaspora networks* (Kuznetsov and Sabel, 2006; Barré et al., 2003) thanks to the Caldas Network. As has already been mentioned, some respondents took part in setting up this network by establishing the Swiss node hosted by the ACIS. It is worth mentioning that most of the founders of the ACIS were among our survey respondents. One of them told:

58 Examples of the first scientific diaspora networks established are the Colombian Caldas Network (Charum and Meyer, 1998) (Charum et al., 1997); and the South African network, SANSA (South African Network of Skills Abroad) (Brown et al., 1999; Brown, 2003).

59 According to the OECD (2008) definition, research and experimental development (R&D) entails creative work undertaken on a systematic basis aiming at increasing the stock of knowledge, and the use of this stock of knowledge to devise new applications. As such, R&D covers three different activities: basic research, applied research, and experimental development. The best-known example of R&D as a brain gain strategy for diasporas is that of skilled Indian expatriates, mainly those active in the information and communication technologies (ICT) sector, who during the 90s were at the root of an estimated third of all foreign investment in India, (Tarifica Ph. Ltd., 1998), creating a development model with the potential to be replicated by other developing countries threatened by brain drain (Khadria, 1999, 2001; Saxenian, 2000).

60 North-South scientific collaborations (KFPE, 2001; Bolay, 2004) encourage research between developing and/or emerging countries (the South) and developed countries (the North), promoting temporary exchanges, joint publications and giving skilled migrants from the South access to the knowledge, infrastructure and equipment of the North; and giving the North the possibility of doing research, and applying and adapting their technologies and innovations in developing country contexts. This mechanism has the potential to act as a bridge for the circulation of these valuable resources to the mutual benefit of the North and the South.

61 By examining the function of these mechanisms within skilled Colombian trans-national practices, brain gain should be considered the result or expected outcome of a practice, rather than an a priori component of the practice itself, with a real impact and/or contribution in the country of origin.

In 1991 I started Colext, linking up Colombian students all over the world. I was the administrator for 2 years; then the Colombian government took it over and this became the Caldas Network.

He goes on to mention the goals of the ACIS and how it lost support from Colombian institutions:

In 1994 the ACIS was a network of some 20 people, most of them in Lausanne. The goal was to use people and their resources abroad for positive development, but not necessarily encouraging them to return. But 1994 also saw a change in the government. The new boss of Colciencias cut down on funding for the project. [...] Today the ACIS needs to recover the good image it once had.

(Physicist and engineer working at the ITU in Geneva)

A further respondent, who was President of the ACIS at the time of the interview, stated:

At the beginning, the ACIS was created with the support of Colciencias, due to the initiative to create the Caldas Network; this support lasted for only 1–2 years.

(PhD in Biology, researcher in Immunology at the Bern University Hospital)

Respondents said that the ACIS was created by bringing together people working in the science field who were all friends. It was created as a social and knowledge-based group. While most of its original and current members are from the EPFL, now there are people with different backgrounds and from various different fields, for instance from the social or political sciences. The President of the ACIS stated: “While the ACIS’ links to the local community are mainly professional, strong kinship and friendship links have formed among its members as well as the professional links.” Skilled Colombian members of the ACIS mentioned that over time the ACIS has become a larger community group with the main crucial challenge of channelling the enormous amount of knowledge the members have. However, it does not count on infrastructure and logistics to transfer this knowledge to good hands in the country of origin. As one Colombian said:

Its impact on Colombian socio-economic development could be enormous. I believe the ACIS is a gold mine that Colombia has not taken advantage of.

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

Skilled Colombians who are members of the ACIS repeatedly mentioned the lack of support the ACIS has received from Colombian institutions. One Colombian, who was also one of the original founders of the ACIS and who is still one of its main supporters, described how Colciencias could benefit from this association:

The ACIS has not got any material support from Colombian institutions; it is actually the ACIS that has benefited Colciencias; and the Caldas Network benefited from the ACIS too without giving anything in exchange.

(Medical doctor, professor and researcher in Immunology at the UNIL)

The ACIS is a very significant example of a scientific diaspora association having an impact on science and technology in the home country, as some of its members have contributed to strengthening the fields of environment, ICT and medicine in Colombia, to name but a few, and to creating a critical mass in these fields locally by establishing scientific collaborations that have endured over time despite being based on individual efforts without any institutional or financial support.⁶² The founders of the ACIS as well as other currently active members who were among the Colombian respondents, recalled the objective of their association as being “the promotion of the implementation of collaboration projects with Colombia”, as well as “to facilitate the interaction of the Colombian scientific diaspora based in Switzerland with institutional actors involved in science, technology and innovation both here and there.”⁶³

Concerning the role of the ACIS in the reinforcement of scientific capacities and in the socio-economic development of Colombia, respondents said:

The ACIS has the possibility to contribute, to identify collaboration opportunities in a range of areas such as environment, engineering, ICT and biomedicine, among others; and these collaborations would have implications for Colombian development. It is indeed a mine that should be exploited.

(Medical doctor, professor and researcher in Immunology at the UNIL)

Despite its ups and downs, the ACIS is still strong and a very powerful tool for communication, information and networking and exchange of contacts; it eventually reinforces capacities.

(Researcher and PhD student in Chemical sciences at EPFL and professor in Colombia)

Capacity building or reinforcement, high-level scientific publications, and research projects applied to development issues in Colombia are some examples that demonstrate the impact of the ACIS' activities on strengthening scientific capacities and encouraging socio-economic development in Colombia. While no immediate economic development is brought about by the ACIS, it is true to say that it has a long-term impact by building capacity. It has been observed, however, that these activities are carried out through the individual efforts of

62 At the forum on scientific cooperation between Colombia and Switzerland, organised by the ACIS in June, 2007, one of the key members of the Colombian scientific diaspora gave evidence of his record of collaborations with Colombia and the lack of institutional support in a presentation entitled: “Memories of a combatant”.

63 <<http://www.acis.ch>>.

the ACIS members, and not by the association as a whole. Regarding the development impact of the ACIS' activities, some skilled Colombians stated:

There are at least 20 PhD students that have passed through the projects of some of the ACIS' founders; there are high-level publications; there has been participation in and/or organisation of training programmes in Colombia; transfer of technology. One example has been a project to reuse water by biodegradation and this has an economic, social, scientific and technological impact on Colombia.

(PhD in Biology, researcher in Immunology at the Bern University Hospital)

The ACIS contributes to the creation of a different vision of Colombia beyond violence and that has a significant social impact.

(Researcher and PhD student in Chemical sciences at EPFL and professor in Colombia)

Recently, the ACIS encouraged a project with scientists in Colombia, involving the Swiss and Colombian governments, who provided funding for research; this collaboration has brought together the School of Engineering of Yverdon and the Institute of Tropical Agriculture in Cali.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

Besides the ACIS, skilled Colombians participated in the establishment of other scientific associations, one example being the Colombian meteorological association. One respondent said:

I was involved in the creation of SOCOLMET (the Colombian meteorological society); I was a founder and in charge of a scientific journal, which has professional and scientific goals; we organised Conferences and seminars enhancing the possibilities of Colombian students to get postgraduate studies in industrialized countries.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

The Colombian case study shows how scientific diaspora networks and associations play a very important role since they facilitate the implementation of the other two brain gain mechanisms, namely strategies for investment in research and experimental development (R&D), and North-South research collaborations. On the one hand, as far as R&D is concerned, the following initiatives have been carried out by Colombians: transfer of technology at an industrial-university level; research projects linked to industry; the design of the Alpha Bio-2000 project;⁶⁴ giving courses, conferences and advice to industry; advice on creating and developing the Internet in Colombia; direct assistance to PhD students in the fields of science and technology linked to industry, etc. Some skilled Colombians talked about their brain gain initiatives in this area, highlighting a lack of interest from their Colombian counterparts, a lack

64 The Alpha Bio-2000 project was a multinational technological project involving research groups from 4 European and 5 Latin American universities. Its goal was to apply instruments that were originally developed to detect basic particles to biomedicine. Charum and Meyer (1998) document details of how the project was built and how it failed to be implemented.

of financial support, and the lack of an enabling environment as the main obstacles with which they were faced. They said:

When I was working at the CERN, I built a consortium of universities from Europe and Latin America to create the Alpha Bio-2000 project. My idea was to go back to Colombia with financed projects and engage those living there, as funding was a problem in Colombia. The project was on biomedical applications of detectors; but these areas were not a priority there. The European Union was going to fund it, but administrative constraints within the partners in Latin America shown that there was no interest; thus the project failed.

(Physicist and engineer working at the ITU in Geneva)

We tried to set up a company to do technology transfer and provide technologies that were non-existent, but there was an international situation that did not help much and many political interests were involved. Colombia was going through a process of selling a huge stake of their telecoms industry. It did not work out.

(Architect and MBA student)

During the last year I have been in contact with the private sector a lot, trying to implement a channel of technology transfer.

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

On the other hand, the North-South research collaborations identified by the project, in which respondents were or had been involved, and which deserve a mention include the Cooperation Programme in the Environmental Field between the EPFL and Univalle; the joint project between the EPFL and the University of the Andes “An Inexpensive Method to Validate Road Transport Emission Inventories” financed by the EPFL-SDC Fund; the Swiss-Colombian Cooperation in Biomedical Research between UNIL and Univalle; the design and implementation of the Colombia-Switzerland Collaboration Project on Agro-ecological Models between HEIG-VD and Biotec Corporation, to name but a few.

The ACIS, in collaboration with the Colombian Embassy in Switzerland, has completed an inventory of the projects that have been implemented in cooperation with participants from both countries. The list offers evidence of a number of projects on Colombian core development issues which are being implemented through collaboration arrangements between institutions. These projects have been motivated by the scientists and have some key members of the Colombian scientific diaspora as their initiators, and involve different Swiss academic and research institutions.⁶⁵ One skilled Colombian explained one of his initiatives:

65 From a total of 11 scientific cooperation projects, 1 was signed at governmental level between the SER and Colciencias and the rest 10 have been implemented through collaboration arrangements between academic and research institutions from both countries. The EPFL has been involved in 5 of these projects; the University of Geneva in 4 projects; and the University of Zurich, the University of Lausanne and the HEIG-VD in 1 project each. See Annex 2: Scientific cooperation projects between Colombia and Switzerland.

I have been working through the ACIS during the last year to initiate a research project on small industry at the UNIL and the Univalle in Cali on Malaria, the idea being to present this type of project evaluated by each country's scientific entities and in which each part brings matching funds to finance a part of the project.

(Medical doctor, professor and researcher in Immunology at the UNIL)

Skilled Colombians who have been involved in North-South collaborations with their home country stressed the richness of such experiences as well as the lessons learned from working in research partnerships. Their knowledge of both contexts and of the local language is certainly an asset, as well as a significant opportunity they can offer along with their professional and scientific strengths. Respondents said:

An important lesson of working in partnerships is that one has to have a lot of patience and be very open to understand the mentality of a person who grew up in another culture and background and who might be used to other ways of working. My knowledge of both was definitely an asset for the project.

(PhD student in Environmental Engineering at EPFL)

During my joint research projects with Latin American countries, I was in direct communication with researchers from the South. I have the advantage that I speak the language; and a relationship of trust develops faster because of my origins.

(Researcher and lecturer in Geography at the University of Bern)

2.3.2 Knowledge Transfer, Social Remittances and Other Trans-national Practices

The interviews found other initiatives that had a significant knowledge transfer and/or knowledge circulation component.⁶⁶ The actions and practices of skilled Colombians involving a transfer of their knowledge to the homeland include carrying out evaluations for Colciencias and other public bodies in key areas of development such as medicine or ICT; maintaining/encouraging relations with government officials in Colombia; finding niches for research; giving advice to Colombians who wish to apply to Swiss research or academic programmes or institutes; giving lectures and tutorials; carrying out research projects there; promoting student and researcher exchanges; participating in scientific conferences and congresses; accepting advisory contracts with private firms; providing research advice on an informal basis, etc. The words of these Colombians

66 Knowledge transfer and sharing describes the process of disseminating and making knowledge available. Knowledge circulation implies a two-way process in which knowledge flows to and from different sources. While knowledge transfer could be an isolated or repetitive action in which knowledge is moving only in one direction, knowledge circulation implies a cycle where knowledge is flowing permanently in more than one direction. Various literature illustrates how knowledge circulation show strong potential for effective and mutually beneficial cooperation North-South (Gaillard and Gaillard, 1999, 2002).

with regard to their initiatives based on knowledge transfer and/or circulation in benefit of their country of origin show how many of these took place during their temporary stays or short visits to Colombia:

When I was in London, I once went to Colombia during holidays to teach mathematics. It was an adult learning programme via radio. I learned about this project through a friend at the Universidad Javeriana.

(PhD student in Mathematics at EPFL)

I gave graduate level courses in the University of Antioquia for five years, every summer; I have been an evaluator of projects for Colciencias; I have given conferences at congresses of the Colombian Community of Chemists, as well as at various universities like Cali, Bogotá or Javeriana.

(Postdoc in Organic Chemistry, working in biomedical research and the pharmaceutical industry in Basel)

Furthermore, beyond the three brain gain mechanisms and knowledge transfer and/or circulation, skilled Colombians in Switzerland carry out personally-motivated initiatives considered to be social remittances (Levitt, 1996, 1999; Nyberg-Sorensen, 2004), understood as “practices, ideas, identities and social capital that migrants channel from the country of destination to the country of origin,” which could create a positive impact in Colombia. The actions and practices of skilled Colombians identified as social remittances in benefit of the homeland include providing resources for the initiatives of Colombian organizations; linking NGOs in Colombia with social entrepreneurs and philanthropists in Switzerland; giving talks to different audiences on a specific subject; etc. A skilled Colombian mentioned an initiative involving ICT in collaboration with an NGO that unfortunately did not work out. She mentioned:

I contributed to setting up a project with coffee-planters, which was trying to set up an e-health network for a big organization (Café Colombia) to provide telemedicine services for their employees. There was interest but for political reasons it got stopped.

(Architect and MBA student)

Finally, regarding technology transfer initiatives, one respondent mentioned her initiative to send scientific equipment used in the pharmaceutical industry that was not being used at her work place to Colombia.

2.3.3 *Impact on Development in the Home Country*

When Colombians were asked about the impact⁶⁷ that their professional and scientific activity could have in their home country, they noted some essential

67 Impact refers to the effectiveness of a project or initiative and its success in contributing to its purpose and aims.

conditions for achieving an impact through their initiatives and practices. Some of these that are worth mentioning are: finding the appropriate channels, counting on political support, getting financial funds, having an enabling environment, finding the right partners, having persistence and ongoing enthusiasm, etc. While some activities of skilled Colombians might have a specific and local impact, other activities were regarded as having a much greater influence. There is an extensive palette of activities with an impact mentioned by the Colombians, as they mention below.

The impact of my activities in Colombia has been mainly specific and local. I have collaborated with the Colombian Embassy in Switzerland as a consultant on science and technology. I have been an advisor to the Colombian government here. I have given courses, promoted exchanges and training programmes. Some activities might have had a greater impact, like when I took part in advising on the creation and development of Internet in Colombia, and I once worked as consultant at the national level on defining scientific policy with Colciencias.

(Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

My activity had a significant impact, like better control of industrial production, and also in the health sector. I work with sensors to control the maturation process of fruit and with diagnostic systems (for AIDS and cancer).

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

My activities here had an impact there through 1) individual contacts; 2) my activities as an advisor on immunotherapy for cancer – in this role I can give my point of view on the standards; 3) my activities as an assessor for Colciencias; and finally 4) by the image I have (of a professionally very successful Colombian abroad).

(Medical doctor, professor and researcher in Immunology at the UNIL)

A skilled Colombian, who has lived in Switzerland for more than 34 years, linked his potential impact to the fact that he has encouraged Colombians trained in Switzerland to return; and he has maintained strong contacts and fluent exchanges with them. He stressed:

I have contributed to the creation of a critical mass in my area of research; Colombians are trained here and then they return to Colombia. We have played our part in gaining regional recognition in this field of study.

(Scientist in Chemical Sciences and Engineering at EPFL)

Some Colombian PhD students thought that their theses could have some impact in their country of origin. They said:

The greatest impact is the possibility to contribute to an understanding of the problems of pollution in Bogota; where does it come from and where is it leading.

(PhD student in Environmental Engineering at EPFL)

My thesis was the first to be done on biodiversity of micro-organisms in Colombia. Now more and more people consider micro-organisms as an important part of the biota; so we are advancing knowledge at microbial level.

(Scientists in Microbiology at EPFL)

Two Colombian women scientists in neurosciences and immunology talked of the greatest impact that their scientific activities could have for the society:

My work might have implications for the whole of humanity because if a medicine works, it is a great achievement. The problem is that many things are handled under very strict confidentiality. The work can only be shared when it is finished.

(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

I am taking part in a project that aims to develop a vaccine against malaria. I am developing a vaccine to know the infectious mechanisms of the parasite, a very complex organism; the impact could be tremendous.

(Senior postdoc researcher in Immunology at the UNIL)

Further respondents spoke of contributions in the reinforcement of scientific and technological capacities in Colombia, or through their influence in the support of cooperation projects there while they were abroad.

I aid specialized NGOs on training in new ICT. I get NGOs in Colombia on board to help improve technology to benefit people, so that people can have greater access to technology. Before I was an advisor at the Federation of Cooperation in Geneva, a group that provides aid and has a budget of about CHF 10 million per year. NGOs receive this money for projects; a certain number of them were in Colombia.

(International official at the United Nations in Geneva)

When I arrived in Switzerland I made contact with the Centre for Human Ecology and Environmental Sciences at the University of Geneva, and contributed to establishing an agreement for student exchanges to come and do research with me as interns. Since 2002, international students have been coming from all over.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

Some respondents carry out grassroots-based initiatives, social projects and philanthropic activities that benefit some of the most vulnerable sectors of the population in Colombia; they provide financial support to this kind of project either on a one-off or a regular basis. This research therefore provides evidence of skilled Colombians' trans-national practices through significant ways in which they are committed to local development.

I have developed social assistance and philanthropic activities. In concrete terms, I sponsor children at a school with limited resources in Cali. We organized an event here last year to support the project and promoted this initiative among our friends. My husband and I sponsor one child each.

(Engineer in Electronics, SAP consultant in Logistics working in Geneva)

I have participated in social projects supporting children and women in Colombia. For example, helping women who have been victims of domestic violence to enable them to become economically autonomous, as well as supporting children so that they can have better future prospects.

(Educational psychologist working for a government institution in Lausanne)

Some Colombians support by giving advice and ideas that might encourage NGO activities and social projects to benefit vulnerable sections of the Colombian population. One Colombian said:

When there are NGOs in Colombia who need help, resources or funding for developing projects, I personally help them, give them ideas and provide contacts.

(International official at the United Nations in Geneva)

2.3.4 Links with Families in the Country of Origin

Following Vertovec (2004a), the daily origin of most migrants' trans-nationalism is to be found within families, and considers kin support as "migrants' most valuable asset in the country of origin" (p. 16). Existing evidence based on migration research suggests that family life has been significantly changed by trans-national practices. This study of skilled Colombians gives evidence of the links they maintain with their families in the country of origin. All skilled Colombians are in constant communication with their families by telephone, Skype or email, and visits. The majority of Colombians encourage links with their friends and relatives back there. Many exchange presents with their relatives back home by sending parcels by mail and/or with people who are travelling to Colombia. Similarly, migrants' relatives there send things that those in Switzerland miss from their homeland.

Furthermore, the extensive possibilities of communication tools and media have certainly encouraged and improved the flow of information and have made it possible to remain in regular contact with their families back home. As Vertovec (2004a) indicates that, an important (but as yet under-researched) type of trans-national practice is the ability to call members of the families as they try to stay in contact with those in their home country. According to Vertovec, the personal and close contacts in real time that international telephone calls provide "transform the everyday lives of innumerable migrants" (p. 13). This fact has been highlighted in recent years by the significant fall in the cost of international telephone calls. One respondent declared:

When I was here in 1997, a one-minute phone call to Colombia cost CHF 3.70. Now I speak for an average of 7 hours per month with my Colombian relatives.

(Architect and MBA student)

Another Colombian stressed that the fact that a member of his family works at an academic institution in Colombia facilitated professional contacts and exchanges with Colombian counterparts:

My brother is a university professor in Colombia, at the Universidad del Quindío. He is a scientist and a writer; so I keep in contact with him on a regular basis.
(International official at the United Nations in Geneva)

Moreover, while some skilled Colombians have houses and property in Colombia and send money to pay for the running costs, it is worth mentioning that more than half of the respondents systematically send back financial remittances to their families and relatives. As Adams (2003) observes, financial remittances have become the most visible evidence and measuring of the links between migrants' countries of residence and origin countries in the migration-development nexus. In the case of Colombia, a few cases have been observed whereby skilled Colombians were sending remittances by providing their family back home with a bank card for their own account which their family could use whenever necessary. While a few skilled Colombians only irregularly send financial remittances, some respondents send money mainly to fund education or infrastructural investment by their relatives. Therefore, it must be stressed that by sending money back to their families, skilled Colombians contribute to forms of consumption that can be considered a "productive use of remittances" (particularly on housing and education), which as Vertovec (2004a) argues "are a good form on investment that will lead to higher productivity" (p. 41). Other skilled Colombians send money to their relatives to buy plane tickets to come to Switzerland. Respondents declared:

I try to support my family in Colombia. I have made a personal commitment to providing undergraduate education for my brothers' and sisters' children. I help by providing loans to them mainly for education but also to help fund housing.
(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

I communicate with my family there by telephone and Internet; I send financial remittances regularly to support my mother who has just turned 100.
(Educational psychologist working in a government institution in Lausanne)

My links with my family in Colombia are very close; they involve sending money to support my father and talking to my family every week. Remittances are the third most important source of income in Colombia; I contribute to this by sending money systematically once a month.
(Senior postdoc researcher in Immunology at the UNIL)

Some individual respondents say that their experiences abroad contributed to better social practices in their family circles because they provide a good

model to follow. *Optimal brain drain* could be one of these positive impacts.⁶⁸

I feel I have had a positive impact on my relatives since I was the first one in my whole family (including cousins and brothers) who got a university degree. They have followed my example and have studied and tried to improve their skills and education levels.
(Supply Chain Project Manager in the packaging industry in Prilly)

2.3.5 Further Positive Impact

An additional positive impact of skilled Colombians' trans-national practices and activities that has been observed is their contribution, through their work and activities in the host countries, to building a good reputation for Colombians and/or raising awareness about Colombia in an attempt to improve people's perception of the country. One respondent highlighted the fact that Colombian PhD students at the EPFL "*have had very good results and they have even won some prizes.*" Another respondent mentioned how she supported the organization *Yo Creo en Colombia* (I believe in Colombia)⁶⁹ by encouraging the founder to make speeches at public events. Other respondents stated:

I am very keen to build up the reputation of Colombians all over the world. I have been very proud to show that Colombia has the potential to produce scientists like me.
(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

I believe that by doing good work outside my country I am already making a contribution. It is maybe also a sign of resignation since I originally wanted to go back and do things in Colombia, but this did not happen.
(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

A further respondent mentioned the limited vision of Colombia that prevails in Switzerland, stressing:

There are many misconceptions about Colombia here, since most of the information shown in the media is incomplete. The picture that is presented of Colombia should be broader. In addition, people are very ignorant. I see young people with FARC slogans on their T-shirts, which is something that is unacceptable!
(PhD student in Soil Physics at the University of Bern)

68 *Optimal brain drain* (Lowell and Findlay, 2001; Lowell, Findlay and Stewart, 2004) refers to the effect that occurs when a moderate emigration of skilled persons of a country causes an increase in the education level of this country's population.

69 The private organisation *Yo Creo en Colombia* was established 9 years ago, aiming at building trust and competitiveness in Colombia through a positive promotion of the country at Colombian and international audiences (<<http://www.yocreocolombia.com/>>).

Finally, the information from the interviews shows that skilled Colombians in Switzerland consider that they are carrying out other type of initiatives for the benefit of Colombia like helping Colombians whenever they come to Switzerland, showing them around or providing them with useful information, and helping them to make contacts and get to know people “in order to make people who come here feel comfortable.” Some also stressed that by receiving delegates from Colombian civil society or scientists and professionals in Switzerland and meeting them when they travel abroad; they transmit their experiences and knowledge. Furthermore, it emerged that skilled Colombians can influence the general development of Colombia through their work in inter-governmental organisations, by encouraging Colombian scientists to participate in projects, capacity building, awareness-raising about environmental issues, improving respect for human rights, increasing democracy, and encouraging peace and dialogue, as well as participating in dialogue on other key issues for Colombian development. Some Colombians stated:

My work helps Colombia by making the country more democratic, by raising awareness about environmental issues, by improving human rights, by opening up Colombia to the world, through better participation of civil society, and by tackling questions of peace and dialogue between people.

(International official at the United Nations in Geneva)

When I was in Nairobi, working as a scientist for the Ozone Secretariat for UNEP, Colciencias sent research projects that were being funded for screening because they wanted to be sure that projects were feasible and helpful to Colombia. I tried to help Colombia to be at the forefront of research, find niches for research. I tried to get developing world scientists on board for different projects/work related to ozone.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

Table 2 shows cases in point of initiatives of the different type of brain gain practices involving skilled Colombians in Switzerland, and offers a brief description of the project and their concrete contributions, that are creating an impact in the home country.

Table 2: Examples of brain gain initiatives, knowledge transfer, social remittances and other trans-national practices involving skilled Colombians in Switzerland

Project	Type of practice	Description	Types of contributions creating impact
Creation of the Association of Colombian Researchers in Switzerland (the ACIS).	Scientific diaspora association	The ACIS was created in 1992 by a group of Colombians gathered at the EPFL as an association of people linked to S&T and research activities with a goal of promoting the implementation of collaboration projects with Colombia. During the 1990s, the ACIS functioned as the Swiss node of the Colombian Caldas Network. Today the ACIS has around 100 members, who promote scientific collaboration with Colombia. Its main objectives are: to establish and maintain a network of individuals involved or interested in the development of scientific cooperation between Colombia and Switzerland; to maintain and provide accurate and up-to-date information about experiences of scientific cooperation between the two countries; to promote the interaction of the Colombian scientific diaspora with academic and political institutions related to S&T.	<ul style="list-style-type: none"> • Knowledge transfer and sharing through the implementation of joint research projects, organization of training courses and scientific events, promotion of student exchanges; communication and mobilisation; contribution to the design and implementation of public policies. • Bottom-up enhancement of bilateral scientific cooperation.
Establishment and implementation of the Cooperation Programme in the Environmental Field between EPFL, Univalle and other Colombian institutions.	North-South research collaboration	The programme aims at providing solutions to Colombian environmental problems through: a strengthening of the scientific capacities of Colombian institutions through courses, training and research; providing added value to EPFL and other Swiss researchers/students through training in Colombia; launching cooperation projects between EPFL and Colombian institutions.	<ul style="list-style-type: none"> • Implementation of long-lasting research in collaboration with Colombian institutions, boosting individual and institutional capacities through knowledge circulation, seminars, conferences and meetings, student and scholar exchanges and joint publications. • Production of: 17 PhDs and Post-doctorates; 19 MA Degrees; 5 undergraduate students; 25 trainings; publications of more than 50 papers and communications in international scientific journals and congresses. • Encouraging the return of Colombian scientists. • Contributions to the design and implementation of public policies related to environmental problems in Colombia. • Contribution to the development of a critical mass of Colombian researchers in the field of the environment.
Implementation of the Colombia - Switzerland collaboration project: Precision agriculture and the construction of field-crop models for tropical fruit species, between HEIG-VD and Biotec Corporation (COCH project).	North-South research collaboration	The COCH project agreement was signed in April 2005 by representatives of Colciencias and the Swiss State Secretariat of Education and Research (SER) and was the first bilateral collaboration project between both countries signed at the governmental level. The collaboration involves the HEIG-VD from Switzerland and the Biotec Corporation, a centre of technological development and innovation promoted by the Univalle which works on the application of biotechnology in the bio industrial sector and the community. The aim of the project is to develop computing tools to model fruit cultivation in order to forecast and describe the behaviour of these crops and increase their productivity.	<ul style="list-style-type: none"> • Knowledge transfer and sharing through joint research; joint publications; promotion of student and researcher exchanges. • Promoting the circulation of competences that can have an impact on S&T in Colombia and contribute to the development and/or strengthening of local capacities. • Adaptation of technologies to the Colombian context in order to contribute to the advancement of the quality of life, and the design of suitable public policies in the fields of ICT and biotechnology. • Three Colombian postgraduate students have been involved.

Project : An Inexpensive Method to Validate Road Transport Emission Inventories.	North-South research collaboration	North-South research partnership project between EPFL and Universidad de los Andes, financed by the EPFL-SDC Fund and implemented between 2004 and 2007. The aim of the project was to find an innovative and inexpensive technique that could enable the validation of road transport emissions. The technique was extended to the entire city fleet and the pollutant modelling was carried out for the purpose of testing abatement strategies that could improve air quality in Bogota.	<ul style="list-style-type: none"> • Knowledge transfer and sharing through joint research; joint publications; promotion of student and researcher exchanges. • Promoting the circulation of competences that can have an impact on S&T in Colombia and contribute to the development and/or strengthening of local capacities. • Adaptation of technologies to the Colombian context to contribute to the quality of life, and the design of suitable public environmental policies.
Swiss-Colombian cooperation in biomedical research between UNIL and Univalle.	North-South research collaboration	The cooperation in biomedical research has established ongoing collaborative ties between the Faculty of Biology and Medicine at the UNIL and the Faculty of Medicine at Univalle, and this has been supported by an interfaculty exchange agreement signed in 1992. Within this context, a long standing collaboration has existed between two research groups at these two institutions, in the field of biochemistry. In addition, other bilateral collaborations have been encouraged and these involve some of the following institutions : Instituto de Inmunologia at the Universidad Nacional with the Swiss Tropical Institute in Basel (on Malaria, Immunogenetics in Aotusmonkeys); the Centro Internacional de Entrenamiento y de Investigaciones Médicas (CIDEIM) in Cali with the Faculty of Biology and Medicine at the UNIL (Leishmaniasis); and the Swiss Institute of Bioinformatics with the Department of Biotechnology at the Universidad Nacional (Training in bioinformatics).	<ul style="list-style-type: none"> • Promoting the circulation of competences that can have an impact on S&T in Colombia and contribute to the development of local capacities. • Contribution to the resolution of public health problems through participation in the design of public health policies. • Knowledge transfer and sharing through joint research; joint publications; organization of scientific events; promotion of student and researcher exchanges. • The joint PhD training programme in parasite immunology has produced: 3 PhD theses; 13 scientific publications; 4 international workshops; frequent exchange visits of scientists to both countries. • Contribution to the development of a critical mass of Colombian researchers and institutions in the field of medicine.
Alpha Bio-2000 project.	Investment strategies in R&D	Multinational technological project created by Colombian scientists at CERN, involving research groups from 4 European and 5 Latin American universities aimed at applying instruments that were originally developed to detect basic particles in bio medicine. The project could not be launched because of various administrative constraints and a lack of support.	<p>The probable impact would have boosted:</p> <ul style="list-style-type: none"> • Promotion of the circulation of competences and the use of cutting-edge technological resources to develop instruments that make a contribution to improving the quality of life. • Employment creation. • Technology transfer that encourages the creation/strengthening of technological industries. • Development and/or strengthening of local capacities.
Promotion of student and researcher exchanges; participation in scientific conferences and congresses; providing research and scientific advice on an informal basis, implementation of research from PhD theses on subjects related to Colombia.	Knowledge transfer/circulation	Through diverse individually-motivated initiatives, skilled Colombians boost knowledge transfer and knowledge circulation through the promotion of student and researcher exchanges, participation in scientific events (congresses, seminars, conferences), provision of research and scientific advice on an informal basis, promotion and implementation of research on issues related to Colombia, all of which are implemented either on a systematic or a one-off basis.	<ul style="list-style-type: none"> • Promoting the circulation of competences that can have an impact on S&T, and education as well as on innovation in Colombia, • Contributing to the development and/or strengthening of local capacities. • Participation in the design of public policies.

Appointment of diaspora members as scientific advisors to public and private bodies, both in the countries of origin and of destination.	Knowledge transfer/circulation	Diverse key members of the Colombian scientific diaspora in Switzerland have been appointed as scientific advisors by Colciencias, the Swiss State Secretariat for Education and Research (SER), the Colombian Embassy in Switzerland, private industry representatives both in Colombia and in Switzerland, to mention just a few. Through these appointments, skilled Colombian migrants have been able to transfer their knowledge and establish strategic links with key public and private actors in crucial strategic development areas.	<ul style="list-style-type: none"> • Promoting the transfer of competences that can have an impact on S&T as well as on the reduction of poverty through participation in the design of public policies in S&T and in socioeconomic development.
Promote the use and adaptation of ICT for NGOs in Colombia to improve their technology standards and to benefit people's quality of life.	Social remittances and philanthropic activities	The use of ICT that can benefit civil society is promoted through diverse projects focussed on Colombian NGOs. These include a project initiative to support coffee-planters through the creation of an e-health network to provide telemedicine services for coffee industry employees, which was designed but could not be launched.	<ul style="list-style-type: none"> • Contribution to poverty reduction and improvements in the quality of life. • Improvement of communication systems used by civil society groups. • Increased awareness of labour rights and quality of life standards.
Involvement in social projects supporting vulnerable women and children in different Colombian regions.	Social remittances and philanthropic activities	Through diverse initiatives and philanthropic activities, skilled Colombians participate in projects that benefit vulnerable children, schools in rural areas, groups of women who are victims of domestic violence, and other vulnerable groups of the population.	<ul style="list-style-type: none"> • Contribution to poverty reduction among disadvantaged social sectors of the population. • Encouraging the advancement of respect for human rights. • Increasing awareness of the importance of human rights. • Contributing to the empowerment of vulnerable civil society groups.
Promotion of capacity building and awareness-raising about the improvement of democracy, governance, the respect of human rights, and the enhancement of peace and dialogue.	Knowledge transfer and social remittances	Through their work in intergovernmental organizations and NGOs, skilled Colombians are able to transfer their experiences and knowledge for the benefit of Colombia. The areas they promote include Colombian development issues related to the political arena and peace on the international agenda, and in some cases their initiatives attract scientists, professionals and NGO representatives based in the home country.	<ul style="list-style-type: none"> • Contribution to the empowerment of civil society to ensure their participation in public and social life. • Contributions to improvements in the political framework. • Reinforcement of the importance of Colombian interests in international dialogue.

Source: Tejada, data collected during the 2007 survey of Scientific Diasporas project.

The survey showed that most of the Colombian interviewees have or have had contacts and/or scientific and professional exchanges with their country of origin at various levels of intensity and in a variety of ways. Accordingly, one third of the respondents maintain scientific and/or professional exchanges with Colombia on a permanent and systematic basis, as the following testimonies show:

At an individual level, I have contacts with some researchers who have followed a similar trajectory but who went back to Colombia. I help them whenever possible. I am a member of the Editorial Committee of the Journal Biomedica; I have academic commitments on a sporadic basis; I act as an evaluator of projects for Colciencias; I advise a private company on a project on immunotherapy in Cancer.

(Medical doctor, professor and researcher in Immunology at the UNIL)

I give courses and teach in Colombia; I have research projects there; I do student exchanges, joint publications with Colombian partners and maintain a permanent level of scientific cooperation with Colombia.

(Scientist in Chemical Sciences and Engineering at EPFL)

Other Colombians are exploring ideas of how to work in and for Colombia without being there in person. One PhD student said:

In the long term, I would like to work in Colombia and right now I would love to start working in Colombia without being physically located there. I have not come across possibilities to do this up to now within my field of research, and also I am not in a position right now to be able to start something by myself.

(PhD student in Mathematics at EPFL)

The Colombians interviewed have a wealth of additional skills and knowledge to offer both to the country of residence and to the country of origin due to their international scientific and professional contacts and experiences. Most of respondents maintain permanent exchanges with the international scientific community and professional organisations in Switzerland, Europe and worldwide. Accordingly, respondents are members of different professional, academic and scientific associations, consortiums, networks and societies in the fields and areas in which they are involved. Those worth mentioning include physics, engineering, biology, medicine, immunology, neurosciences, chemistry, environmental engineering, development studies, ICT, mathematics, management and administration, geography, geology, and architecture. Moreover, Colombian researchers and professionals are members of associations, regional and/or international scientific committees, advisors to research consortiums, and/or reviewers for scientific journals in some of the above-mentioned disciplines and fields. All these contacts and activities indicate that Colombian skilled migrants have a wide range of interests and professional linkages to offer with the potential to influence their country of origin.

I am frequently invited to international congresses and take part as an expert in the evaluation of various programmes (like the German Institute of Cancer Research, the Institut National de la Santé et de la Recherche Médicale (INSERM) in France; etc.), and of research theses in France and Italy, as well as a regular evaluator for the Netherlands Cancer Institute, and of the Research Fund on Leukaemia in the UK. I am a scientific leader for PANEL, a cancer vaccine consortium in the USA; I am a member of the Board of Directors of the International Society of the Biological Therapy of Cancer; I work closely on projects with the Ludwig Institute in Brussels and with Glaxo Smith Kline in Brussels....

(Medical doctor, professor and researcher in Immunology at the UNIL)

I belong to a project involving 12 different countries from the European Union; it is a consortium of research into malaria, HIV and tuberculosis.

(Senior postdoc researcher in Immunology at the UNIL)

2.3.6 Brain Gain Strategies and Lessons Learned

Although most of the Colombians interviewed do not follow specific brain gain strategies and base their pursuits purely on their opportunities, personal motivation and interests, it is also true to say that constant communication, networking, finding the adequate partners, institutional contacts, scientific and professional contacts, capacity development, taking advantage of their knowledge of both cultures and contexts, and forming part of scientific and research associations (mainly the ACIS) are elements which have helped to push their initiatives forward. Other respondents stressed the importance of embassies in promotion and support of their initiatives. Others mentioned that the good reputation of Switzerland in Colombia has also helped. Respondents declared:

A good strategy has been to encourage communication with people, to attend congresses, to contact researchers directly – this has given good results. I have tried to take advantage of my own knowledge and of my personal motivation. Here I am working in state-of-the-art technologies and in Colombia people are interested in these issues. Moreover, I try to apply the technology in other research fields that promotes multidisciplinary.
(PhD student in Geosciences and Geochemistry at the University of Bern)

Networking and the establishment of links are necessary conditions for a successful strategy. Involving the Ambassador by providing the right connections would really help out; official channels are reliable.
(Architect and MBA student)

A Colombian scientist provided a roadmap with some key guidelines that brain gain initiatives should adopt. His experience is based on many years of scientific collaboration projects with Colombian counterparts in the area of chemical sciences. He said:

It is important: 1) to establish partnerships that act as bridges, and that train the partners at the highest level to enable them to wield initiative and influence; 2) to reinforce the existing resources, both at institutional level and in terms of human resources; 3) to open spaces and share the available network of contacts and facilitate the exchange; 4) to create a basis of mutual trust.

He went on to mention some of the favourable circumstances that have helped his initiatives and practices that benefit Colombia:

Some favourable circumstances that have helped are the good reputation I have, my basis of scientific interests and the clarity of my motivations.
(Scientist in Chemical Sciences and Engineering at EPFL)

When asked about the lessons they have learned from their brain gain initiatives, skilled Colombians mentioned the lack of financial support and the lim-

ited financial resources, a lack of interest from Colombian counterparts, conflicts within institutions, and a lack of institutional continuity as some of the main difficulties that they have faced while developing their activities. Limited time was also mentioned as an impediment together with bureaucratic constraints, mainly in the home country. One Colombian said:

I once thought about sending equipment that was not used here anymore to the University of Colombia. But all the bureaucratic obstacles there frankly put me off; it was very difficult to arrange for the import of these devices. Since then I have not done anything to continue that first initiative.

(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

As stated previously, a few respondents emphasised the constraints related to the non-recognition of diplomas, a fact that limits every initiative. Respondents revealed that this does have a positive side in that, despite the obstacle of not having their diplomas recognised, in their professional lives, Colombians are well accepted and have a good reputation in the research laboratories. Others stressed the fact that a high level of goodwill is required if people are to give up some of their free time, which entails extra work hours.

A significant obstacle that we Colombians have is that the diplomas that we get in Colombia are not recognised; and people have problems being accepted into a PhD Programme. It is not easy to make contacts mainly due to the fact that universities do not recognise our diplomas.

(PhD Student in Basic Sciences at the UNIL)

At the initiative of the 'Grupo Antioquia', the goal was to map the competences of Colombians here, a mind map identifying extraordinary skills, but we did not know how to put them to the service of our home country. A problem was the lack of time despite a great deal of goodwill, and also the bureaucracy.

(Supply Chain Project Manager in the packaging industry in Prilly)

Skilled Colombians said that they first need to settle professionally "here" before starting to develop initiatives "there." Accordingly, the research shows as it has been mentioned previously, how a stable residential status facilitates regular exchanges, while the lack of a stable status seriously hinders migrants' transnational practices. Moreover, when asked about the reasons for her lack of contact with Colombia and of initiatives that might benefit her homeland, one skilled Colombian replied:

My goal is first to lay down strong foundations in this new research area I am now starting, and then to take off and start offering my knowledge and experience, as well as potentially teaching in Colombia. However, in the private sector, the sphere of freedom is restricted through confidentiality clauses. Moreover, I have been concentrated all these years on my life here and on providing a future for my children.

(Molecular Biologist and Project Manager in the food industry in Vevey)

Others mentioned the lack of commitment by their counterparts in some of their experiences of joint projects. Respondents think that there are often lofty ideas, but they require a lot of effort to get done and sometimes people are not determined to see them through.

Initiatives in favour of Colombia require a lot of constancy and perseverance. The idea of collaboration is that everyone agrees that the project should be done, but most of the time this is not how it is; not everyone is keen on developing resources and seeing these initiatives undertaken.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

The lessons learned by respondents on their initiatives for the benefit of their home country indicate that their messages are addressed to both the country of origin and the country of destination. There is a need for structured and sustainable efforts; support has to come from both sides (the country of origin and the country of destination); and suitable partners have to be found, especially official sources that can contribute to turning their initiatives into genuine projects.

2.4 Motivation, Ability to Mobilise, Perception of Enabling Environment and Policies

The scheme proposed by J. Brinkerhoff (2006) is useful to identify specific determinant factors that facilitate scientific diasporas' initiatives to support their homelands. She identifies motivation, the ability to mobilise, and an enabling environment and policies as the three main determinants. An analysis of the information given by Colombian respondents about their initiatives, experiences and strategies involving their country of origin in the interviews helped us to identify how and to what extent the three factors anticipated by Brinkerhoff influence Colombian scientific diasporas' possibilities to have an impact on their homeland.

2.4.1 Motivation

Drawing on Esman (1986) Brinkerhoff explains *motivation* as the inclination to preserve solidarity and exert group influence. As Séguin et al. (2006) declare, skilled migrants feel a moral responsibility to give something back to their countries of origin. Motivation or *affective capital*, which is an entrenched characteristic of diasporas' identity, is strong among skilled Colombians in Switzerland. The empirical evidence shows migrants' deep desire to give back to their homelands. The majority of skilled Colombians show a lively and impassioned sense of motivation towards Colombia. "I would love to do some-

thing for my homeland” was an oft-repeated phrase throughout the interviews. In this tone, respondents said:

My initiatives towards Colombia are based on a strong affective element I have for my country. It is also due to a need to fulfil a feeling that I am giving something back because I am not there; and also my desire to play a central role in my homeland.

(Scientist in Chemical Sciences and Engineering at EPFL)

There are no specific strategies behind my initiatives; they are based on goodwill and this is becoming more and more intense due to my links and my personal motivation.

(Medical doctor, professor and researcher in Immunology at the UNIL)

I have not been very active and I feel sorry for this. But in my current position I could and would be delighted to do anything that benefits Colombia. I have a lack of information; a lack of discipline and maybe also a lack of time, but if I can make a contribution... I am ready to go ahead!

(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

Some of the “giving-back” initiatives and practices of skilled Colombians targeted their family circles; others have their roots in personal inspiration and ambition of making knowledge and experiences available to the society by way of a sort of “payback” reaction. Skilled Colombians indicated:

I send remittances sporadically. I am supporting a young cousin by financing her studies to enable her to get into university; without my support she wouldn't be able to do it. I come from a medium level social class with scarce opportunities and I have found my way. I feel obliged to help other young people to find their way too.

(Medical doctor, professor and researcher in Immunology at the UNIL)

I am very satisfied and grateful for the education I received in Colombia and my contribution is to offer what I do and what I know. It's a way of giving something back.

(Scientist in Microbiology at EPFL)

2.4.2 Ability to Mobilise

The Colombian case study shows how trans-national initiatives towards the homeland tend to be informal and based on individual motivation and personal aspirations. However, it is worth mentioning that the mobilization of the resources of skilled Colombians in Switzerland also takes place through collective efforts, principally through their participation in the ACIS, where they share a sense of community (Esman, 1986; Brinkerhoff, 2006). For Brinkerhoff (2006), identity expression as a motivation can be encouraged through the formation of diaspora organizations and the development of collective activities in favour of the home country. Skilled Colombians in Switzerland gathered in associations have a mutually reinforcing inspiration to have an impact and also to share a sense of community. As such, while a sense of community encourages their wish to have a positive impact in the home country, influencing mat-

ters in the home country also stimulates the creation of a shared sense of identity. Brinkerhoff (p. 21) states that “much of the motivation to mobilise will derive from the diaspora itself – from individuals’ own inclinations to reinforce and express their homeland identity and from the supportive diaspora communities and identities they co-create.”

As far as cooperation initiatives with the country of origin are concerned, the Colombian scientific diaspora in Switzerland can be classified into three specific groups: 1) An active core group formed by a number of scientists and researchers who maintain close links with the homeland on a dynamic and ongoing basis. Even though the level of intensity of their practices has varied and the level of their motivation has also suffered some ups and downs, the members of this group have impacted scientific cooperation with Colombia through various cooperation and scientific collaboration projects based on the systematic transfer of knowledge. 2) A group located on the periphery but close to the core, and made up of researchers and scientists including students, with specific trans-national practices, most of which are planned (not spontaneous) but with an uncertain scope. 3) A group situated on the periphery and far from the core, which consists of researchers, scientists and professionals with spontaneous and isolated trans-national practices and initiatives. The Colombians situated at the core are active members of the ACIS (some are founding members and at some stage they have held management positions within the association), as are most of those who are located in the near periphery. The Colombians who are situated in the far periphery are not members of the ACIS and some of them are even unaware of its existence (See Table 3).

Table 3: Groups of Colombian scientific diaspora in Switzerland according to level of cooperation with the homeland and link to the ACIS

<i>Colombian scientific diaspora group</i>	<i>Level of cooperation intensity and links with the homeland</i>	<i>Link to the ACIS</i>
<i>Core group</i> made up of scientists and researchers mainly in permanent job positions in top Swiss academic and research institutions.	Very active role in terms of boosting scientific cooperation; close links with the homeland on a dynamic and ongoing basis.	Active members of the ACIS, some are founding members.
<i>Close periphery group</i> made up of researchers, scientists, students and professionals.	Mostly planned (not spontaneous) transnational practices but with uncertain scope; close links with the homeland.	Active and passive members of the ACIS.
<i>Far periphery group</i> made up of researchers, scientists, students and professionals.	Spontaneous and isolated trans-national practices and initiatives; weak links with the homeland.	Not members of the ACIS and some even unaware of its existence.

Source: Tejada, data collected during the 2007 survey of Scientific Diasporas project.

Scientists who are involved in the ACIS represent a structured group that works at both an individual and a collective level, which seeks to have a positive impact – mainly by enhancing scientific and technological collaboration be-

tween Colombians in Switzerland and research institutes and universities in Colombia. The evidence shows that some Colombian scientists in top academic and research institutions in Switzerland, who are founding members of the ACIS, have initiated projects without any institutional support, fuelled simply by their inspiration and their desire to create positive change. As such, the ACIS has functioned on the basis of the personal inspiration and collective enthusiasm of its members for over 15 years with no bilateral framework agreement or institutional support. Even today, the ACIS organises events and gatherings that enable members to meet and get involved in various initiatives. These events have helped nurture a fertile environment in which ideas can be developed and they also provide members with a chance to build collectively on already existing ones.

While two-thirds of the respondents that participated in our survey are members of the ACIS and four of them are founding members, a few respondents had never heard of this association. The testimonies of the ACIS members show the following as some of the main obstacles/worries for the positive development of the ACIS' objectives. The lack of permanence of its members does not allow any continuity; there is no clear formulation and awareness of its objectives towards the community; there is a lack of human resources and time to maintain the website; there is no list of the projects that have been developed, no permanent infrastructure, no continuity in the support received; it is a challenge to keep the Association alive and active; there is too much mobility among its members (many leave Switzerland, and many do not have stable jobs); etc.⁷⁰ A skilled Colombian stressed:

Some of the main challenges of the ACIS are to be able to survive and to grow. One problem is the lack of institutional continuity; we received support, but every 4 years the representatives of the government as well as the policies change; the support remains dependent on the economic situation.

(Medical doctor, professor and researcher in Immunology at the UNIL)

About the expectations of people in regard to the ACIS, one skilled Colombian said:

People think that the ACIS can serve two purposes: 1) help skilled Colombians to return to Colombia in better conditions; or 2) help them build collaboration projects; but the ACIS does not do that. (Moreover) there is no memory in a database in which the Association could show what it has done; maintaining the website is a problem.

(Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

70 It is worth to mention that Colciencias has provided recently a financial support of USD 10,000 to the ACIS, in the framework of an agreement signed in 2008. This punctual contribution will be used by the Association to complete a data base of researchers and financial sources, as well as to organise events.

In the same tone, a skilled Colombian woman, who was President of the ACIS at the time of the interview, mentioned:

One major challenge has been to have people working permanently for the Association; we are all volunteers and that limits its operations. If the activity does not pay you back somehow, it is not easy to continue; it is difficult to keep constant work. Other limitations are the time and the physical space; we organise the meetings in different members' homes.
(PhD in Biology, researcher in Immunology at the Bern University Hospital)

A further element respondents mentioned that hinders the ACIS initiatives and activities is the bureaucracy of Colombian institutions. One respondent said:

The administrative and bureaucratic obstacles in Colombia are enormous. I was the first President of the ACIS and I gave up because working with Colombia is difficult. People have a different work rhythm there and a different level of commitment.
(Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

Some of the strengths of the associations that were mentioned by skilled Colombians were its contribution to establishing contacts and providing support to skilled Colombians arriving in Switzerland, mainly by providing a network of social and professional contacts. It is indeed recognised as an important gathering place and as a platform for the recognition of the potential of the Colombian scientific diaspora in Switzerland. A further positive impact that was mentioned was related to the integration of the scientific and professional Colombian community in Switzerland. In this regard, the ACIS President mentioned: "the ACIS plays an important role in the integration of the skilled Colombian community in Switzerland." This view was not however shared by all respondents. One Colombian said that the ACIS has not succeeded in linking and including the whole Colombian diaspora. He stressed:

The ACIS is very much centred on engineering at the EPFL. It should be more global. It also lacks a link component. Many people working in banks or the private sector here are hidden and remain unknown; the ACIS should bring them together. Many people have good influence or high level positions that could create opportunities.
(Supply Chain Project Manager in the packaging industry in Prilly)

About the role that the ACIS and other scientific associations might play in social and economic development, as well as in developing scientific and technological capacities in Colombia, the testimonies of Colombians show their scepticism about their evident development impact. Colombians said:

It would be pretty optimistic to say that associations have the power to foster the development of these capacities. Individually each person keeps in contact with institutions in Colombia. That is the role they play there, but it is hard to assess the impact of their work so far. They are very one-off initiatives.
(Research scientist on brain-computer interfaces at IDIAP Research Institute)

Associations might be good platforms for improving S&T levels in Colombia through community activities that achieve specific goals. They can of course help, but they need to do more, for instance to involve international partners and personally dedicated people, and they need the support of governments. The governments on both sides – in the country of origin and of destination- and members must come together and be dedicated and willing to bring about change.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

Finally, the interviews provided some information about the strategies that the ACIS has been following in order to survive and remain active in recent years. Conferences and a cooperation forum are some of the activities that have been organised in this regard. One respondent asserted:

There is a low level of commitment and no budget but we take advantage of the privileged position that some of us have in the scientific and academic world in Switzerland. Two colleagues and I are continually boosting this; we are the engine of the ACIS and its stalwarts, but we have no time.

He went on to stress that an additional important challenge was to keep in contact with those members who either return to Colombia or move to a third country. This is an excellent idea but there are also considerable obstacles.

A great potential would be to be able to maintain the links with people who go back to Colombia and to develop our collaboration further. But for this to be done, we need a clear strategy and funds. The Association can only earn around CHF 600 in membership fees.

(Medical doctor, professor and researcher in Immunology at the UNIL)

The information from the interviews shows that other associations of Colombians have been set up in Switzerland and that respondents have participated in founding them. *Presencia Latinoamericana*⁷¹ or *DePapaya*⁷² are a couple of examples.⁷³ One further example is the Network of Colombians in Geneva,

71 It was created with the aim of gathering together different associations and initiatives by Latin American communities in Switzerland. The motivation was to join forces by integrating them into one sole association. It aims to display the diverse cultures of the different communities; to develop a common perspective; create/reinforce Swiss – Latin American exchanges; and facilitates integration (<<http://www.presencialatinoamericana.ch>>).

72 Association for Colombians in Switzerland: created to promote the integration of Latin American immigrants in Switzerland making use of ICT through an informative communication portal (<<http://www.depapaya.org>>).

73 There are many associations and groups involving Colombians in Switzerland, which mainly aim to promote cultural and social activities. A few examples are: *Aguapanela* (group of Colombian folklore dancers), *Jorcamba* (Colombian musical group), and *Colombia Vive*. Furthermore, there are also social projects in which skilled Colombians are involved or which they have supported, one example being the *Afromogica* project, a community project in Cali.

which was founded by a skilled Colombian in the 1980s with the aim of contributing to greater democracy in Colombia, then later changed its name to the Association of Colombians in Geneva. He stressed:

I took part in founding a network of Colombians abroad; there were different nodes and the one for Europe was based in Geneva. The objective was to contribute to democratization in Colombia. We found funding, held conferences and meetings in Europe and Colombia to inform and denounce, and hoped that things would change; it became the Association of Colombians in Geneva.

(International official at the United Nations in Geneva)

A further respondent said:

I created the association *Presencia Latinoamericana*. It was in response to the need I perceived that people have to organise and act together in order to achieve something.

(Educational psychologist working in a government institution in Lausanne)

Despite these examples of collective actions by Colombians on behalf of their home country, it is worth noting that not all Colombians become members of an organisation and not all of them tend to encourage their mobilization through collective action. As has been previously mentioned, many disparate, one-off individual initiatives came to light. Analysis of the information contained in the interviews showed that some skilled Colombians thought there was a clear “dispersion of diasporas’ initiatives” and this was in some sense seen as a result of the political polarization of the home country. Some Colombians stressed the fact that every Colombian has his own vision of the political situation in the country, and insisted that these interests would have to be reconciled if they wanted to reach a common goal. One respondent said:

People reproduce the polarization here that you see in Colombia. Extremely well-qualified people from the left do not mix with those from the right; there is no dialogue. Someone once tried to bring together all the Colombians working for international organizations. They met once. But different people with different (especially political) interests would not mix. People with different political notions or from a particular neighbourhood in Bogota won’t mix with people from another neighbourhood.

He regretted that scientific associations or networks are exclusive. He stressed:

The creation of diaspora networks is a good idea to bring together Colombians, but we have to bear in mind that diasporas are social, cultural and political, while scientific associations or networks are for scientists only, hence exclusive.

(International official at the United Nations in Geneva)

Another skilled Colombian also mentioned that the political polarization of Colombian society was being reproduced in its diaspora. He stated:

When Colombians meet there is always a lot of social stratification. They are sceptical about meeting Colombians outside their usual circle and they do not trust them (are they refugees? asylum seekers? prostitutes?). The Colombian diaspora lacks a unifying component, and this cannot be created through an association.

(Supply Chain Project Manager in the packaging industry in Prilly)

It would therefore be pertinent to examine how migration reproduces the social groups of the home society in the host country, or else produces new social groups. As Bejarano Rodríguez (2007) states, it is important to identify the forms in which class structures of the home country are reproduced in the migratory context, as well as “the image of social inequality that is reconstructed through migration” (p. 225). The weak social cohesion experienced by Colombian society is reproduced in its diaspora, and one of its implications is the difficulty of gathering together and forming solid associations. As Riaño-Alcalá and Goldring (2006) recall, the legacy of four decades of conflict in the social fabric of communities and the social relations of Colombians is visible during the migration process as well as in efforts by Colombians outside the country “to come together and form associations regardless of their aim” (p. 19).⁷⁴ This fact lies at the root of the apparent heterogeneity of the group of Colombians who left their country in the late 90s and early 2000s.⁷⁵

Furthermore, Colombians said that nostalgia was a common feeling among migrants. While this feeling endures over the years, it does not seem to be a decisive element in terms of encouraging common activities with their fellow nationals while abroad. In this regard, some respondents mentioned:

I know that, unlike many other nationalities, Colombians are very nostalgic. They long for their country and they always go back. So if they can somehow help their country, they certainly will. The only thing is that you do not know how to, and the longer you stay abroad, your links begin to be just family and friends; contacts with industry and academia weaken a lot.
(Architect and MBA student)

74 Drawing on their research on Colombians in Canada and their trans-national commitments, Riaño-Alcalá and Goldring (2006) state that the interest and capacity of Colombians abroad in their home country depend to a great extent on how groups negotiate membership in their country of origin. This negotiation includes the political relationship between migrants’ groups who construct one aspect of their identity based on their context of departure.

75 Despite our research focused on skilled migrants (one might therefore be tempted to think that the Colombian respondents might have a shared identity in this regard), our perception from the interviews is that skilled Colombians come from a variety of socio-economic backgrounds, as well as different reasons for departure which might influence their propensity to associate and their motivation to develop initiatives that benefit their home country. As Riaño-Alcalá and Goldring (2006) mention, the group of Colombians who left their country of origin during the five-year period from 1999 to 2003 is a very heterogeneous one in terms of their regions of origin, their rural or urban background, their socio-economic status, their level of education as well as their reasons for leaving.

I am not a member of any association related to my country of origin. I probably share the same feeling of nostalgia with other Colombians, but who says we are going to share a lot simply because we are both Colombians.

(Senior Economic Counsellor and MBA student in Geneva)

Finally, it is worth mentioning that skilled Colombians' ability to mobilise to transfer their resources in benefit of Colombia based on individual motivation and aspirations, through collective action within the ACIS and other diaspora organizations, shows continuity in time. This confirms, as argued by Vertovec (2004a) that once migrant colonies become well established abroad, a flow of trans-national resources starts, "ranging from occasional remittances to the emergency of a class of full-time trans-national entrepreneurs" (p. 55). Following Vertovec (2004a) the swelling effects of this dynamic come to the attention of national governments who reorient their international activities in such a way to recapture the loyalty of their expatriates and guide their investments and mobilizations. However, the general perception of skilled Colombians towards the governmental, national, pro-diaspora policies is evident scepticism.

2.4.3 Enabling Environment and Policies

The interviews tried to tease out the perceptions that skilled Colombians have of both *policies and the enabling environment* that might encourage their flow of resources and knowledge. An enabling environment conducive to diaspora resources and to pursuing positive initiatives for their homeland is mainly based on the initial structures and available opportunities that encourage such an environment. These might for example include: support from state institutions both in the country of origin and in the country of destination; access to infrastructure and resources; institutional programmes; encouraging science and technology policies; a stable political system; appropriate social and economic conditions in the country of origin, etc. With this in mind, skilled Colombians were asked to give their opinion regarding their country of origin, focussing mainly on social problems, the economic progress made in recent years, scientific policy, and the political challenges.

Some of the people interviewed sense that the economic situation of Colombia has improved. They cited macroeconomic stability, business dynamism, a growth in exports, the boom in the construction sector, an increase in direct foreign investment, and the vitality of the markets. Some skilled Colombians mentioned they were surprised that a country with so many problems should be capable of reaching such a level of economic development. However, inequality was a source of worry for the Colombians – a majority of them mentioned the growing gap between rich and poor. Only two Colombians showed any optimism about the possibilities in the long run. Some stressed that the country

might be doing well in macroeconomic terms but that this does not seem to be having any impact on individual living standards. One respondent stressed:

The economic situation in itself is sustainable, I think; but it starts being complicated when you link it to the social situation. I know a lot of entrepreneurs and economically it seems that the country is peaking and becoming stable, but when we link this to the social reality, that is when questions start to be raised.

(Architect and MBA student)

Regarding the social panorama, the qualified Colombian interviewees were pessimistic and worried about a situation which they described as being “*difficult*,” “*problematic*,” “*extremely complicated*,” “*unfair*,” “*serious*” or “*catastrophic*,” because of social polarisation, inequalities and the unequal distribution of wealth, poverty, insecurity, instability and violence, as well as the serious problem of the internally displaced. The overwhelming tone was one of worry:

The central problem is the unfair distribution of economic resources in the country. We must improve opportunities for everyone, as well as increasing the involvement of the local population.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

The economy is doing well but people are doing badly. The macroeconomic situation is good, but the gap between rich and poor is increasing. There is greater job insecurity and instability. The wealth of the companies does not work its way down to the people that work for them.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

As regards the political environment, some of the skilled Colombians have the perception that their home country is immersed in a politically unstable situation because of the armed conflict and the drug cartels. In terms of governance and the rule of law, the Colombian interviewees believe that there is still a long way to go as weak institutions, corruption and the lack of transparency, restrictions on freedom of expression, the lack of a consensus between the government and the opposition, a lack of political dialogue between polarized groups, and human rights abuses are all typical of the political scene. One Colombian said that “*political attitudes are increasingly polarized, and the governmental elites do not react; political evolution is going too slowly and not keeping up with people’s needs.*” The criticism towards Colombian institutions was evident from skilled Colombians’ perceptions of their homeland. Respondents said:

Colombia is a country with great potential. It has great human resources, hard workers, good education, universities and hospitals, a good resource base, plenty of water and natural resources, great food... all components for development. It just needs better management.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

The elites haven’t understood that there is a link between economic and political development. There is a need of more democracy to help unblock economic problems. There are

highly qualified people and the country contributes to the global economy; unfortunately a large part of the population works in the informal sector since the formal economy doesn't provide sufficient resources for its people.

(International official at the United Nations in Geneva)

Our perception was that Colombians are interested and informed about what is going on in their country of origin. In general, they seem to be worried about Colombia's socio-economic and political situation. The effect that this could have on them is that their desire for security, stability and opportunities to better themselves will influence them more than any other considerations when it comes to deciding whether they want to return to their homeland:

Unfortunately we have got used to the misery in the country, to violence, impunity, and to a lack of respect; and I think this is the root of the problem. It seems like we have no memory; we take for granted things that seen from other perspectives are not normal. I know that Colombia has positive and negative aspects, but I feel sad that we have got used to violence.

(Scientist in Microbiology at EPFL)

I think the social situation in Colombia is very dark. The important values in which our society has been built have been more and more destroyed, mainly due to drug trafficking; the drug trade has ended up degrading our social values.

(Scientist in Chemistry and Microtechnics in the healthcare and life sciences industry in Lausanne)

The interviews provided some interesting information about Colombian scientific policy and scientific and technological research there. One scientist emphasised the excellence of some areas of research in Colombia. He thinks Colombia is third in Latin America behind Brazil and Chile, which are now at the vanguard of science and technology. Interviewees' main concern is the lack or insufficiency of institutional support and of resources for research and science. "Scientific research is not a priority" was a sentence that was repeated by many Colombian scientists. Others highlighted the lack of continuity with regard to scientific policy as a major problem as it changes a lot from one administration to the next. On this issue, one Colombian said, "You never know if the new person in charge is going to keep the same policies as the previous one; you don't even know how long this person will stay in that position." Additionally, one respondent said she was surprised to see how so many positive things are done with so little investment in scientific research:

I see how little money is given to scientific research and there is a lot of talent. More support should be given so as to enable more things to be done. Colombia is at a relatively good level compared to many other countries.

(PhD in Geology at the University of Bern)

The following were seen as the main challenges and proposals for a Colombian scientific policy: establishing a long-term scientific policy; the need for the private sector to show greater commitment to science; less decentralization and greater involvement by the private sector in science; the need to increase the focus on education in order to make it more accessible to poorer sections of society so that they can develop their own capacities; providing more resources for research to bring it up to international levels; transparency in the handling and distribution of funds and in the institutions responsible for scientific policy; and establishing evaluation committees with members of the diaspora so that they can guide and advise universities and educational and research centres. One scientist stated:

Scientific policy is a key area for Colombian development. Colombia has excellent levels of research in some areas. The investment in science should be increased to at least 1% of GNP; but unfortunately this depends on the prior resolution of some priorities like poverty or the armed conflict.

(Medical doctor, professor and researcher in Immunology at the UNIL)

One respondent stressed there are some “*privileged groups*” that benefit from current scientific policy; he declared: “Colciencias manages the financial funds for science, but unfortunately their management is totally political and not scientific.” He went on to say: “Most of the resources are given to private universities and this is a scandal. In general terms, science is not a priority, nor is education important – they are something reserved for the ruling class.”

A further respondent also stressed corruption in the allocation of research funds as one of the most important weaknesses in Colombian scientific policy:

There is corruption without limits in the access and distribution of funds. There is no transparency in the support of scientific capacities. Always the same people are those that have funds for research. Moreover priorities are not clear and many people do not have a scientific mentality.

(Molecular Biologist and Project Manager in the food industry in Vevey)

A skilled Colombian recognised that despite the lack of governmental support for science in Colombia he perceives, his home country has excellent research groups in certain areas. He mentioned some examples:

There are some research groups with a very good standard, for example Mr. Patarollo’s looking at malaria; he has managed his public relations quite well and has created a very good centre for genetics. Tropical medicine is also of a very good standard. There is a Centre of Software Production in Cali, the technological park with contacts to Australia and the USA.

(Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

Finally, one of those interviewed highlighted the increased number of doctorate students in Colombia in recent years. This is due to new opportunities to obtain research positions at universities as a result of the vacancies created by some lecturers retiring and also because many researchers are leaving the country.⁷⁶ Another Colombian mentioned:

My university back home is requesting that their professors and lecturers have at least a Master's degree and encourages them to finish their PhD. This certainly helps to boost scientific activity in the country even if it has slowed down a lot due to political problems.
(PhD student in Soil Physics at the University of Bern)

Respondents draw attention to the fact that opportunities must be created at home if return migration is to be encouraged and/or if emigration is to be reduced. Skilled Colombians believe that their home country does nothing to retain its citizens. The lack of opportunities encouraging skilled people to stay is seen by many as one of the main problems. Some even perceive the general context of the country as being so bad that people want to leave:

10% of the population live outside the country. Colombian policies should be focussed on providing opportunities and developing infrastructure for people to work in top-level jobs. Sustained economic development is a central challenge.
(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

Economic or political reasons are often the main reason. People move and sometimes lose their links with their families, houses and jobs to start all over again in other countries. There are many political refugees, and also many people leave to study abroad because there are better facilities there.
(International official at the United Nations in Geneva)

The interviews attempted also to tease out skilled Colombians' perceptions of the enabling environment in the host country, which might encourage their flow of resources and knowledge. They were therefore asked to give their opinion on Swiss scientific, cooperation and migration policies. The interviewees have a very positive perception of Swiss scientific policy, recognising that investment in science is a priority and that the public resources available for research are enormous, leading to a high level of scientific productivity. Those interviewed also recognised that the considerable investment in science and technology and in R&D by the private sector in Switzerland is a great plus.

76 Here again, we need to ask ourselves at this point whether this situation is provoking an *optimal brain drain* effect, as explained by Lowell, Findlay and Stewart (2004), which could be a positive element giving the fact that each year only an average of 46 Colombians obtain a PhD in their home country (average of the period 2000–2006, as stated in Table 1).

I have always admired Swiss productivity; that such a small country could have such a high standard of scientific publications and so many Nobel prizes. Some very important findings have been generated here.

(Scientist in Neurosciences, working for a pharmaceutical company in Basel)

In contrast, almost half of those interviewed regarded Swiss co-operation policy towards Colombia as insufficient or inadequate. In this context, Colombian researchers pointed out that if policy were oriented differently, there would be greater possibilities for multiplying and increasing co-operation. A scientist with many years of scientific collaboration with Colombia said:

Analysis of North-South cooperation at a scientific level and as a conceptual, theoretical and practical space still has to be done, and it cannot be based on development aid; it cannot be a copy of it. Many people in scientific cooperation in Switzerland come from the development aid sector and I think that puts scientific research at risk.

He went on to say:

Switzerland should integrate diaspora members to enrich dialogue in public policies. Swiss institutions should encourage people with cooperation experience to participate in its institutions. The cooperation sector is a very sensitive one; it is based a lot on goodwill and not on science. Support is provided by cooptation; it is a highly protected sector.

(Scientist in Chemical Sciences and Engineering at EPFL)

According to other Colombian scientists and active members of the scientific diaspora:

Switzerland should ask itself what it wants from the international scientific community; higher funds should be allocated to carry out research with developing countries. Developing countries should be treated as equals. Each partner should contribute according to its strengths, not just rich countries doing research on health and poor countries providing humans for clinical trials. (Research scientist on brain-computer interfaces at IDIAP Research Institute)

One of the main difficulties for the initiatives on behalf of Colombia is the lack of funding from the Swiss side. It is difficult to motivate Swiss partners in engineering. It is hard to convince them that there will be good results; they consider the level of engineering in Colombia as low. (Professor in computing at EPFL and Dean of ICT at the HEIG-VD)

As far as Swiss migration policy is concerned, the Colombians interviewed are worried about the restrictions on migration for Latin Americans. Many mentioned the three circle model policy⁷⁷ which limited student permits. “*Restric-*

⁷⁷ According to the “three circles model” the Swiss government introduced in 1991, immigrants from the European Economic Area had preferential status (first circle). If demand for labour could not be satisfied by immigrants from these countries, workers from the United States, Canada, Australia and New Zealand could be recruited (second circle). All other countries formed the third circle.

tive,” “tough,” “negative” and “exclusive” were some of the adjectives used to define this policy. Some respondents were troubled by the conceptualisation of foreigners as a threat to Swiss identity (Riaño and Wastl-Walter, 2006) and to national security. A young scientist, who has already lived in Switzerland for seven years, pointed out that “Swiss migration discourse shows how many foreigners there are in the prisons, but it doesn’t show how many there are in the universities.” Other skilled Colombians feel that it is unfortunate that the migration debate in Switzerland does not give a clear idea of what migrants might contribute to Swiss society and that debates on migration always focus on certain aspects of migration, which are often negative such as violence, false claims for social security, crime and other costs of migration – never the benefits.

Riaño and Wastl-Walter (2006) stress that while Switzerland has succeeded at the international level in presenting itself as multicultural and humanitarian, at the national level it has applied restrictive citizenship policies that have brought about selective social exclusion of its immigrants. The authors show that in fact, by portraying skilled migrants as “better able to integrate,” the Swiss state discourse on foreigners introduces a distinction between immigrants by class. In practice, this is clear from the decision to replace the “three circles model” with the “two circles model,”⁷⁸ prioritising immigration from the European Union (EU) while at the same time authorising the entry of skilled migrants from non-EU countries.⁷⁹

Skilled Colombians see Swiss migration policies as unfortunate or even incoherent and contradictory:

I don’t think Switzerland has a coherent migratory policy and I am very critical of this. At the moment its attitude is very exclusive and xenophobic because it excludes mainly countries from Africa and Latin America. However it has to be recognised that in the humanitarian sense Swiss society shows an extraordinary level of solidarity but this is visible within the population but not at of the level of the state.

(Educational psychologist working for a government institution in Lausanne)

78 The “two circles model” or *dual system* (Becker et al., 2008) introduced in 1998 replaced the “three circles model” by a classification that only differentiated between European Union/European Free Trade Association countries and all others.

79 In a recent study, Becker et al. (2008) point out that the selective immigration policies of the “three circles model” introduced in 1991 and the “two circle model” which replaced it in 1998 led to a significant increase in the share of skilled immigrants over the last few years. Their study on *the Swiss migration policy and industrial structure* comes to the conclusion that the current admissions policy has made a positive contribution to structural change in Switzerland (Becker et al., 2008). Similarly, as Pecoraro and Fibbi assert in a further chapter of this book that the transition to a knowledge-based economy, along with the selective admission policies of Swiss immigration legislation based on selection by skill level and nationality, might have contributed to today’s migrant flows being better qualified than before.

I feel it is an insult to have to show a paper certifying a marriage to a Swiss in order to be able to set foot in a university.

(PhD student in Soil Physics at the University of Bern)

Respondents mentioned Switzerland's mistakes as being its failure to take advantage of qualified migrants who have spent some years in Switzerland and who are well integrated; not making a selection of immigrants in accordance with their capacities but rather according to their nationality; not facilitating their integration into the labour market; and not introducing a skills-based points policy like other countries as Canada.

Swiss migratory policy has a great problem which is that it creates a system of dual rights: those of EU member countries and those of third countries. This creates barriers to professional integration for people that come from those third countries. Firms prefer to employ people with a C permit rather than a B permit, so the policy discriminates according to your origin and not according to a migrant's skills. Moreover, there are no programmes to facilitate integration by skilled migrants.

(Researcher and lecturer in Geography at the University of Bern)

The Swiss migratory policy is hypocritical and is based on a knee-jerk reaction. On the one hand it favours skilled migrants, but on the other hand we should ask ourselves how positive that is and for whom. Switzerland keeps the best trained people and, in the final analysis, this represents a loss for the countries of origin.

(Scientist in Chemical Sciences and Engineering at EPFL)

One respondent raised the question of brain waste:

I think that personal experiences are not exploited, and there is a high level of brain waste due to the separation between industry and scientific knowledge. Both should be fostered equally: on the one hand, personal and professional experience, and on the other hand the experiences on scientific knowledge.

She went on to consider the particular difficulties faced by women from developing countries:

People get a work permit only when they are highly qualified and when they are able to do something that no one here would be able to do. This policy is very restrictive and it is even more difficult for women who have in many cases followed the longest and hardest paths before they were accepted.

(Molecular Biologist and Project Manager in the food industry in Vevey)

Respondents raised the issue of difficulties faced by students when they finish their study programmes, since they are forced to go back, or the "hypocrisy" of policies towards irregular migrants who have provided good labour during the years:

On the one hand, people say that Switzerland welcomes skilled migrants, but students are always forced to leave when they finish their studies. Many students are funded by Swiss government working on Swiss projects and then forced to leave. This feels contradictory because they do not take advantage of skilled migrants who have spent several years here and are well integrated.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

For irregular migrants who have no papers, there is certain hypocrisy because often Swiss people and institutes hire them and then they are sent back. Many Colombians who have worked for years in honest positions providing good labour will be expelled but should be regularised.

(International official at the United Nations in Geneva)

It is remarkable that some respondents raised the issue of the acceptance and good reception of Swiss migrants who moved to Colombia during the Second World War to start a new life. They mentioned that Switzerland should not forget history and should act towards Colombian migrants today in the same way. Furthermore, some skilled Colombians stressed the fact that both countries of origin and countries of destination should recognise the potential and value of scientific diasporas to contribute to both countries. Colombians think that policies in host countries should encourage this:

Skilled migrants should be recognized as people who can contribute to both their countries of origin and their countries of residence. This should influence the way research is done. There should be a space where the work migrants do that helps their countries of origin is highlighted. This should be part of the goals of scientific institutions in Switzerland.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

Switzerland should encourage Colombian scientists that temporarily stay, work or study in Switzerland to either go back and really help Colombia, or to assist them by establishing mechanisms to transfer their skills to the homeland.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

It is worth pointing out that some respondents mentioned the key role the Colombian Embassy in Switzerland has played in promoting their initiatives as well as recognising and promoting Colombian scientists and existing bilateral collaborations within the Swiss scientific arena. However, they also highlighted the need for somebody in the embassies to be dedicated to science and scientific collaboration, which has not been the case up to now. Respondents said:

I would like to stress the fact that now it is the first time that a Colombian ambassador to Switzerland launches her mandate so quickly, and invites us to discuss with her and informs us that scientific bilateral collaboration is one of her two priorities. This is a great opportunity. The speed of this ambassador is certainly based on what the former one did. There is a sense of continuity.

(Medical doctor, professor and researcher in Immunology at the UNIL)

Embassies should have people in charge of science much like they have people in charge of culture. This would help link people and initiate scientific activities. Switzerland was chosen to test this idea, but it wasn't pushed through.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

One scientist explained how the Colombian government did once have the idea of creating the position of scientific consul, aiming at encouraging science and technology through the appointment of key representatives of the scientific diaspora in four specific Colombian embassies in Europe. Unfortunately, the project did not come off. He explained:

Some years ago the government wanted to establish the post of scientific consul. Four of us were ready to take up those positions. But the four countries in which those scientific consuls would be appointed (Switzerland, France, Spain and Germany) did not accept this diplomatic figure; it was a mistake of the Colombian government since it started the process without any prior consultation.

(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

A further respondent stressed the importance of her links with the Embassy in her efforts to encourage a brain gain towards Colombia:

The last Colombian ambassador here in Switzerland was a good friend. She would always give me ideas of how to provide something for Colombia.

(Architect and MBA student)

The perceptions of skilled Colombians of the enabling environment provide evidence of the support and enabling policies that are required to give systematic encouragement to initiatives by skilled Colombians. It is therefore worth mentioning that the ACIS' considerable experience and the increasing visibility of initiatives for Colombia's benefit testify to the lasting motivation and the persistence of the most active members of Colombian scientific diaspora in Switzerland. However, there is a need for a supportive and consistent scientific policy in Colombia as well as greater scientific recognition in Switzerland (which might encourage an appropriate institutional framework for bilateral scientific collaboration) to capitalise on the resources of skilled Colombians.⁸⁰ As one Colombian professor clearly pointed out:

80 For example, with regard to Swiss bilateral scientific collaboration with the other case study countries of our project, India and South Africa, it is worth mentioning that both have an institutional framework supporting science and technology exchanges since both are priority countries in the current bilateral cooperation strategy of the Swiss State Secretariat for Education and Research. Various instruments within the institutional framework guide and promote scientific and technological cooperation at an inter-university level as well as at scientist-to-scientist level. At the other extreme, there is no institutional framework for scientific collaboration between Switzerland and Colombia despite the fact that many collaboration

Diasporas on their own cannot do much without the active participation of governments. Diasporas contribute with the human element “here” but the human element “there” is also essential. Up to now, one-off things have been achieved but there is no continuity; there is no sustainable bilateral strategy. The diaspora is the starting point, but it does not represent anything on its own.

(Professor in Computing at EPFL and Dean of ICT at the HEIG-VD)

2.5 Migrants' Future Plans and Expectations: Settlement, Return or Circulation

The interviews took account of skilled Colombian migrants' future plans and expectations by asking them how they envisage the development of their scientific and work careers over the next ten years. They gave varied and interesting answers. The scientists and researchers in the sample showed greater commitment to research and teaching, scientific achievement, professional stability and a better position in their workplace (particular for PhD students and postdoc researchers). Additionally, many mentioned that they would like to establish and or increase links with their country of origin and thus hope in future to have concrete projects running with counterparts in Colombia. Their future plans and expectations include being more involved in project management; directing a lab and research projects, if possible with the country of origin. When asked “How do you see your life in 10 years concerning your country of origin?” one skilled Colombian responded categorically: “I love my country and I will always remain involved in activities there.”

Colombians stressed that a stable professional situation allows them to make plans for the future. Accordingly, well-established Colombians see themselves as being a lot more professionally active in the future and as being in the privileged position of being able to decide what they want to do. Both men and women mentioned looking for increased international recognition as well-established professionals or scientists. Some respondents would like to explore new research fields and enjoy scientific recognition in a new area. Some think about staying in the host country, others would like to go back to Colombia.

I would like to be back in Colombia, but probably not in the academic sector. I am in an exploration phase.

(PhD student in Mathematics at EPFL)

initiatives have been carefully established on a bottom-up basis over the past two decades at both university-to-university and scientist-to-scientist level. Most of these have been promoted by members of the Colombian scientific diaspora. Since collaborations without institutional support are fragile, it is time for a response in terms of Swiss scientific policy.

I would like to explore a new research field and to reorient my research themes and be recognised for a relevant contribution in that new area.

(Scientist in Chemical Sciences and Engineering at EPFL)

Other skilled Colombian expressed her flexibility and openness for new opportunities; she has not yet defined her future.

I feel well settled here but I remain flexible and anyway in 10–15 years I'll probably have different thoughts. I have difficulty projecting myself in the long term; I do not make plans. I will solve my future later but will be opened to opportunities.

(Molecular Biologist and Project Manager in the food industry in Vevey)

Some Colombians raised the issue of students abroad and the granting of scholarships in return for a commitment to return. Some scholarship programmes insist on the students going back to Colombia to pay back the grant and to apply what they have learned abroad in the home country. However, Colombian institutions are now finding out that people with grants decide not to go back.

Colombian institutions should accept that not all people will go back. But there should be possibilities for these people to stay in contact with the scientific community in Colombia and share their knowledge. It seems a shame otherwise. There should be some open doors and greater mechanisms for collaboration to ensure continuing interaction.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

I have some friends that came on scholarships from Colfuturo that they are now supposed to pay back. But students took on debts in US dollars to study abroad with the idea of returning to Colombia. However they did not get the opportunity to go back in good conditions while here in Switzerland they found possibilities, so they stayed.

(Supply Chain Project Manager in the packaging industry in Prilly)

Some researchers and scientists mentioned they would like to link science with society and have plans to carry out activities with a significant social component, if possible ones that involve their country of origin. This social approach was also shared by some professionals and staff in international organisations, who see themselves in a higher managerial position in the host country but somehow linked to their homeland through projects into which they could plough back their expertise. They declared:

I see myself involved in development and entrepreneurship, helping business to create greater social value. I might leave to create my own company to benefit my country of origin.

(Senior Economic Counsellor and MBA student in Geneva)

I see myself doing research and also having a sort of association in which I would have on the one hand the experience and the money, and on the other the possibility of applying what I have learned. I would like to open a consultancy on environmental issues to contribute to the development of Colombia in some way, both scientifically and socially.

(PhD student in Soil Physics at the University of Bern)

Skilled Colombians would like many things for their home country in the future. The interviews showed that those Colombians with strong links to institutions in their home country are keen to keep up these links, not only to their universities but expanding them to other institutions. Some would like to see more investment in research and a growth in the self-confidence of Colombian science, so that there is less dependence on external technology and a real boost to Colombian industry. Some believe that this could have a greater impact of everyday life of Colombians.

In gender terms, different and interesting information emerged about the decisive factors in the future plans of skilled Colombian women. Young female Colombian PhD students who have lived in Switzerland for less than 5 years and do not have any children came across as adventurous, dynamic and enthusiastic about their own strengths and choices to determine their own future. Despite their unstable situation, some of them turned out to be optimistic, and willing and ready to take decisions to plan their professional futures on their own terms and to explore new challenges in the host country. These attitudes show once again that unlike unskilled migrants, skilled migrants have wider choices that allow them to shape their own future. There were however some women respondents who were more worried about their future. For these Colombian women, mainly scientists and lecturers with greater professional experience and who had lived in Switzerland for longer than the previously mentioned cohort of women, their unstable professional situation seems to be a significant factor that prevents them from setting out their future. These respondents with unstable positions said that they would like not to have to be worrying the whole time about how to get enough funding to pay their salaries in the short and medium term. Some respondents pointed to their precarious jobs and regretted the fact that they have not yet been able to obtain a permanent work permit and settle down. They declared:

I would like to be in a more stable position and not always have to run around looking for funds to finance my position. I would also like to have some projects with my country of origin.

(PhD student and lecturer, Institute of Geography, UNIBE)

The keyword is settling; either here or there or in a third country, I would like some stability. If Switzerland can provide me with this, I'll stay; if it is a third country, I will move there. Stability is based on the possibility of being able to settle down, to put down roots, to be able to say that I do not depend on a work permit or a visa, but on my own personal decision. I am searching for opportunities in countries where I might get a permanent work visa (like in Holland or Canada, or even in the USA).

(PhD in Biology, researcher in Immunology at the Bern University Hospital)

Other respondents mentioned their desire to find a system by which they could come and go on a regular basis, but they recognised that this is not easy. One respondent said:

I would like to come and go on a regular basis but the reality is that I might stay in Switzerland; I do not leave the idea of moving to a third country since my situation here is very unstable.

(Scientist in Chemistry and Microtechnics in healthcare and life sciences industry in Lausanne)

A critical dimension of skilled migration is that the person returns to his or her country of origin (Tani and Mahuteau, 2008; Skeldon, 2005). Half of the respondents do not intend to return to Colombia but do intend to build or strengthen the bridges between their country of origin and their country of destination. Only a few intend to return in the short term or have plans to return to Colombia after they retire. While respondents showed that they were open to developing professional and/or scientific activities in their countries of origin, in fact only a few Colombians see their future plans as involving their going back to Colombia. While these respondents expect to be able to go back to their homeland and apply there what they have learned here or else to have research projects managed here but implemented there, only one Colombian seems sure that he will definitely go back in the short term and will remain in Colombia permanently. This Colombian came to do postdoc research and plans to have his own research group once he gets back to Colombia. This respondent has contributed through his work, which has been consistently supported by his adviser, who is one of the leading figures in the Colombian scientific diaspora in Switzerland, to the development of a critical mass in his field of research in his home country.

I see myself at the Universidad de Antioquia heading a well-established research group that could be of the same standard as any European research group; and working with research networks in Europe, mainly in Switzerland and France.

(Researcher and PhD student in Chemical sciences at EPFL and professor in Colombia)

Some respondents are willing to go back but are sceptical about the professional opportunities that Colombia has to offer. One skilled Colombian woman said categorically: "If I get a good job position with good conditions in Colombia I will go back, with all its advantages and disadvantages." Further respondents stressed the fact that most of the skilled Colombians that leave their country do not go back, for all kinds of reasons, one of which is that they feel they would be making a big professional sacrifice by going back and they are not ready to do that. Many of those who are conscious of the sacrifice their return means are unable to integrate themselves and leave again. In other cases, scepticism about the professional opportunities on offer in the home country are

mixed up with the personal and family situation of respondents. Some respondents stated:

A friend of mine went back to Colombia after being in the USA and she found it hard to find her place in academic life in Bogota. They wanted to hire her but at that time the university was not ready to take on people with a PhD and there were many administrative obstacles; then she couldn't get a job as a scientist in the private sector. So she went back to the USA. I don't know how things are going to turn out for me in my field.

(PhD student in Mathematics at EPFL)

Colombia has to create the conditions to keep and attract its skilled people back. I was talking with a friend who works at the CERN and is involved in state-of-the-art research about the possibilities of returning to Colombia and he stated, "I'd have nothing to do there".

(Senior Economic Counsellor and MBA student in Geneva)

In Colombia there are no projects that make skilled people want to go back; there is no policy that supports skills return. In my own case there are personal reasons that won't make me go back since my wife is Italian and has a research position in Turin, so I might be moving there. However I do not see any possibility of developing projects in Colombia that are comparable to what I am able to do here.

(PhD student in Geosciences and Geochemistry at the University of Bern)

In this regard, recent approaches to return migration (Cassarino, 2004; Tani and Mahuteau, 2008) provide evidence of return skilled migration, with its human, financial and social capital implications (Ammassari and Black, 2001) as being one of the most frequent ways the sending country stands to benefit from migration.⁸¹ Docquier (2007) shows that when skilled migrants transfer their knowledge and/or technology back to developing countries upon their return, they can increase productivity and economic development in their home countries. Similarly, Skeldon (2005) mentions that once the process of return is under way, return migrants contribute to the development of their countries of origin by bringing their skills with them but also by bringing capital, and entrepreneurial and political ideas. He argues that return migrants are unlikely to be the key factor in the development of their homeland, yet they can play a significant role.

In the Colombian case study, there were various interesting testimonies related to this. What particularly came across from the responses was the need for an enabling environment in the homeland that could encourage return migration. Indeed, diverse studies have shown that appropriate policies, institutional frameworks and infrastructure in the home country are necessary to encourage migrants to go back to their home countries, as well as to ensure that returned

81 Recently, migration literature has addressed aspects such as return procedures, policy frameworks, and principles and guidelines for return (Ghosh, 2000; King, 2000), while international organizations have attempted to provide some tips for managing return migration.

migrants stay long-term (Black and Gent, 2004; Gent and Black, 2005; Cassarino, 2004; Tani and Mahuteau, 2008). Evidence has shown that, in fact, only a suitable environment in the home country will enable the return of its skilled nationals and their commitment to producing endogenous socio-economic development. Colombian respondents said that there would have to be opportunities at home if return migration was to be encouraged and/or emigration reduced:

Colombian policies should focus on providing opportunities and developing infrastructure for people to work in high-level jobs. There is a crucial need for sustained economic development.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

Colombia has to create the conditions to encourage scientists to return. There is still a long way to go, but some efforts are perceptible, at least in my field. Some calls have taken place and some incentives to encourage scientist to return have been implemented.

(Medical doctor, professor and researcher in Immunology at the UNIL)

Some respondents stressed clearly that they do not want to go back to their home country, mainly due to the fact that they have better professional prospects in Switzerland. One Colombian responded to the question on how would she see her relation with her home country in 10 years' time with a categorical refusal to return and was sceptical about the opportunities her home country has to offer:

I see myself far away from Colombia. I do not want to go back; I do not believe that I would be able to do what I do here; there are a lot of constraints on basic research there. Moreover it is neither easy to live in Colombia nor to progress there.

(PhD Student in Basic Sciences at the UNIL)

One Colombian raised the issue of financial remittances as an element of attraction and motivation for other Colombians to leave the country, but also mentioned the risks this might entail. She thought that the government's current support for migration policies does not allow those abroad to bring something back and/or to transfer their skills, and is based only on illegal migration:

So many people left Colombia in the 90s and there are so many funds coming into the country every year now that many Colombians have realized the huge potential for them abroad. I think this has become more of an issue than in the past [...]. There are programmes set up for other kinds of migration – for those emigrating for economic reasons and illegally to survive, but there are no clear and official channels that might help scientific diasporas.

(Architect and MBA student)

Those who feel settled in Switzerland have no plans to go back to Colombia. Some respondents mentioned that owning their own house in the host country

contributed to a feeling that they had settled for good, but they nevertheless expected to maintain their professional links with their homeland.

We will stay in Switzerland; we've built a house here. I expect though to have the same fluid relation with Colombia as I have today, with professional and familiar links. I cannot expect more because I have actually no time to get more involved.

(Medical doctor, professor and researcher in Immunology at the UNIL)

The data we gathered revealed how personal and family relations are ever more important factors in decisions to migrate or return. This illustrates that the decision to migrate or return to the home country is made for a combination of personal reasons and potential professional and training opportunities. One respondent, who has just finished her PhD, mentioned that she was getting married here. She had no clear vision of the path her professional life would take, but she was sure that she would be staying in Switzerland in the short and medium term. In this case, the initial reason to migrate – to study – changed to family reunification or marriage as the reason for staying in Switzerland. As in other similar cases, the Colombian case shows that skilled Colombian who migrate to study and /or train but then establish a bi-national couple with a Swiss partner seldom end up returning to the home country. Ossipow (2004) has concluded that the migration paths of students living in a bi-national couple (composed of one Swiss partner) very rarely lead back to the country of origin. This skilled Colombian stressed:

I came to do my PhD. I have just finished my thesis and I have no clear idea of what I'm going to do next professionally, but I have no plans to go back to Colombia, I think I'll stay in Switzerland or move to a third country.

(PhD student in Environmental Engineering at EPFL)

Respondents with children of school age mentioned that educational opportunities and an adequate environment for their children had made them decide to settle permanently in Switzerland or to go back to Colombia in the future or even to move to a third country. The information from the interviews shows that children often determine the future migration paths and patterns of skilled migrants. This was not the case for single migrants whose future migration paths are based on purely personal and individual decisions. Some respondents with children also stressed that wherever they may live in the future, they will encourage links with their country of origin since they want to ensure that their children will remain in contact with their relatives, their roots and their culture. Their experiences provide evidence, as stated by Vertovec (2004a), that children of migrant parents may get entangled and end up feeling that they are caught between two (or more) cultures, nations, educational systems and ways of growing up, “conveying one of the risks of trans-national childhoods, i.e.

feeling marginal in both places” (p. 15).⁸² The accounts of skilled Colombians give some clues to the need for deeper research and analysis of such trans-national children.

I do not know if I could go back to Colombia or not. My son is 12 and he identifies greatly with the “Swiss.” [...] It is hard to know where he will be in 10 years. My contacts with Colombia will probably be less sporadic. The enthusiasm will decrease over time. However I wouldn’t like to lose contact – if you don’t have friends or family, the existing contacts vanish.

(Postdoc in Organic Chemistry, working in the biomedical research and pharmaceutical industry in Basel)

My daughter (13) has three different passports: Colombian, New Zealand and Austrian. My migration project depends on where she is going to live and where we are going to live. If my daughter has children, we might stay in Switzerland; if not we would live for 6 months in New Zealand (my husband’s homeland) and 6 months in Colombia.

(Researcher and lecturer in Geography at the University of Bern)

My husband (Colombian) and I see ourselves living here but going there often enough to give our son the opportunity to have contacts with the family and culture back there. This is very important to me.

(Engineer in Electronics, Consultant SAP in Logistics working in Geneva)

One respondent mentioned that speaking about going back to Colombia is always a paradox for her, because she was raised in Colombia but her mother is Swiss. Furthermore, insecurity is an issue for her in Colombia, especially in terms of the living conditions for her children. There is the additional issue of her identity. She further declared:

I was raised in Colombia, but my mother is Swiss. I have both nationalities. So every time I go to Colombia, I feel a little bit further apart in terms of the realities of being a resident there. Having a family there seems very complicated to me, especially now I have children. Security is an issue. I was a child there and I was happy, but I was sort of one of the lucky few.
(Architect and MBA student)

The testimony of this skilled woman with dual nationality shows how the acceptance of dual citizenship is some kind of recognition of the specific symbolic and emotional ties that trans-national migrants have, and as such is, as stated by Faist and Gerdes (2008), official legitimisation of their multicultural identity.

82 According to Vertovec (2004a), for migrants’ second and subsequent generations, the socialization process within the parents’ trans-national-oriented environment and practices “often has a substantial influence on long-term configurations of attitude, activity and identity” (p. 23). He adds that second generation youth culture might become “a place of struggles to define notions of authenticity” (p. 23).

Colombian skilled migrants who will retire in coming years plan to adopt a system by which they spend some months per year in Colombia and the other months in Switzerland. Some have great expectations about the personal contribution they will be able to make to their country's development. Others are planning to return despite the fact that their children might be staying in Switzerland.

I plan to go back to Colombia to retire and my wife agrees. I will perhaps start to write books again, which I used to do 15–16 years ago. I hope to have the chance to contribute to some research initiatives; I hope to really help with ideas and projects for the UNEP.

(Senior scientific officer at the Secretariat of the Basel Convention of the UNEP in Geneva)

My wife and I are planning to go back to Colombia when I retire. We have a house in Cartagena. I have siblings here and my children might stay here in Geneva. I will be probably travelling abroad for a little while before that because my work at the United Nations always makes that possible.

(International official at the United Nations in Geneva)

Finally, one respondent pointed out that he did not want to expose his daughter, neither now nor in the future, to the unsafe environment he expects from his homeland. Interestingly, he, along with other respondents, thinks he has more opportunities to help his country of origin from the distance. They stressed the importance of the presence of skilled Colombians abroad for the home country, and the significance of having a trade-off between people going back and people staying abroad. In a similar manner, another skilled Colombian stated that members of the Colombian skilled diaspora should build bridges and support people in their scientific endeavours by encouraging the transfer of knowledge.

I am very bound to Colombia, but I don't want my daughter growing up in an unsafe environment. In the future, I might stay in Switzerland and not retire to Colombia. I feel I can do more help from here than by moving back there.

(Physicist and engineer working at the ITU in Geneva)

It is good for Colombia that not everybody goes back. Sometimes I feel I can help more by staying here than by going back, for several reasons. I will not be able to do the kind of work I do here so if I go back it is a waste for me and I will be taking the place of someone else. If I stay abroad I can act as bridge and expand my contacts and connect people from Switzerland and Colombia, and encourage people to do science and research, and to transfer knowledge.

(Research scientist on brain-computer interfaces at IDIAP Research Institute)

In this regard, it is now fairly common knowledge that many countries expect and even encourage migrants to stay abroad not only because they send financial remittances home (Vertovec, 2004a) but because it has also been recognised that the presence of skilled nationals abroad is an extremely important factor in encouraging national science and technology systems, particularly in developing countries. For this, however, various mechanisms need to be put in place to mobilise the valuable capital of skilled migrants for the benefit of their

homelands by linking them up with skilled nationals at home. Although the Colombian government has shown its readiness to consider scientific diasporas a source of knowledge, ideas, skills and further resources through initiatives aimed at involving them in its development agenda, the encouragement of the ownership of the public initiatives by diaspora associations and organizations is certainly necessary to make further progress in this area and capitalize on their potential.

Conclusions and Policy Recommendations

In the current international debate on migration and development, the role of the scientific diasporas that bring together skilled migrants as agents of development is becoming an increasingly relevant factor thanks to their status as carriers of valuable capital which can be mobilised for the benefit of their homelands. With a view to offering some clues that can help make a contribution in terms of capitalizing the potential of skilled migrants from developing countries, the research project “A Swiss Network of Scientific Diasporas to Enforce the Role of Highly Skilled Migrants as Partners in Development” carried out an empirical study during 2006 and 2007 based on a series of qualitative in-depth interviews with skilled migrants from three countries: Colombia, India and South Africa, from the perspective of one country of residence (Switzerland).

The case of Colombian scientists and professionals in Switzerland is paradigmatic. Indeed, Colombia is a global reference point in terms of scientific diasporas and in particular the engagement of the Colombian scientific diaspora in Switzerland in the advancement of socioeconomic development in the homeland is exemplary because of its initiatives over time to mobilise its resources and skills using dynamic methods beyond the official state structure and without the help of institutional support. However, it is not very well known in Switzerland or abroad and its activities and its achievements are also relatively unknown, and the same can be said about the obstacles that limit the capitalization of its potential and resources for the profit of Colombia.

This chapter offers empirical evidence on 27 skilled Colombians in Switzerland, and it analyses the reasons for their decision to migrate and their migratory paths. It also builds a sociological portrait of their living experiences in Switzerland and explores the favourable conditions and obstacles that they face in their attempts to implement trans-national initiatives and practices for the benefit of their homeland.

The empirical analysis of highly skilled migrants in Switzerland has produced the conclusions that are outlined below.

The Colombian scientific diaspora in Switzerland mobilises its resources towards the home country using a bottom-up approach, which is centred around both individual initiatives based on personal motivation and aspirations as well as its collective efforts organized through participation in associations (principally through the Association of Colombian Researchers in Switzerland – the ACIS). The research brings to light more than 20 years of collaboration experiences between Colombian scientists in Switzerland and their counterparts in Colombia, allowing systematic bilateral scientific collaboration. However, the evidence shows the fragility of collaboration based around scientists rather than an institutional framework which can sustain it on a regular basis.

The Colombian case shows how institutional relations, social contacts and scientific links influence the class position of the skilled Colombian migrants in Switzerland through collective and associative actions, facilitating their integration into the social life and the labour market. Skilled Colombian migrants have more options than the lesser qualified thanks to their more favourable class position in the country of destination, which helps to ease their integration. Although the integration of the skilled Colombians in the country of destination enables their trans-national activities for the benefit their country of origin, the evidence shows that this is not a totally indispensable requisite to ensure the emergence and implementation of initiatives that favour Colombia.

The formation of scientific diaspora associations (specifically the ACIS) and the implementation of joint research projects are two of the most elaborate “brain gain” methods of the Colombian diaspora with the potential to impact science and technology and they also help to advance socioeconomic development in Colombia. They have contributed to strengthening a critical mass in specific and significant areas such as the environment, ICT and medicine, as a result of the development of individual capacities, and in some cases institutional capacities as well.

Those with the deepest trans-national feelings are the skilled Colombian migrants who have lived longest in Switzerland, those who have settled here permanently and those who have acquired Swiss citizenship. This can be seen through their continuous bifocalism or their double framework of reference (an ongoing comparison of their “here” and “there” situation). This goes to prove, as Guarnizo et al. (2003) argue, that trans-nationalism is not a phenomenon associated with recent arrival which tends to disappear with the passing of time as part of a process of assimilation in the country of residence.

The Colombian scientific diaspora has a broad vision of development, which is shown in various ways through their initiatives for the benefit of their homeland, such as, for example, the circulation of knowledge through courses, con-

ferences, research projects, scientific and student exchanges, joint publications, visits that promote the consolidation of science, technology and education; the promotion of business opportunities; philanthropic activities; investment links; and other similar socioeconomic actions that help to reduce poverty in Colombia.

Motivation, the ability to mobilise and a suitable environment and policies are three determining factors that facilitate the initiatives of the Colombian scientific diaspora for the benefit of Colombia. Even though affective capital and the ability to mobilise are characteristics of the Colombian scientific diaspora in Switzerland, there has been a need for support from a consistent scientific policy which can recognize their potential and capitalize their resources.

Since the Colombian scientific diaspora represents a mature community in the country of destination, the expectations are that its trans-national activities for the benefit of the development of Colombia will continue and expand over the course of time.⁸³

At the level of research on scientific diasporas, additional studies are needed to explore these conclusions in greater detail. Furthermore, in order to complement this study by providing a complete panorama of the subject, it is fundamental to analyse skilled Colombian migration from the perspective of the country of origin with a view to having a better understanding of the risks and opportunities of the emigration of the most skilled and to evaluate the conditions for their return. The research from the perspective of the country of origin should also include the identification of best practices which strengthen and promote the development of capacities in Colombia, and which stimulate the transfer of the knowledge of the skilled Colombians abroad.

Finally, there is a need for a policy oriented study, which can offer some clues as to how to ensure that the scientific collaboration and exchange mechanisms that currently exist between Switzerland and emerging and developing countries do not have a negative effect on the efforts being made to develop the capacities of the countries of origin. At the same time, there is also a need to make sure that the circulation of knowledge is promoted and the demands of the labour market are satisfied.

The conclusions of this research have the following implications for public policies both in the country of destination and in the country of origin:

83 As Vertovec (2004a) points out, the Colombian case study shows how a flow of trans-national resources starts as soon as migrant colonies have become well established abroad. Following on from Vertovec, once national institutions recognize the cumulative outcomes of this process, they try to recapture the loyalty and resources of migrants and guide and support their initiatives and investments. Colombian institutions are expected to follow this trend in the close future.

1. Only an adequate environment that strengthens the capacities and the infrastructure available in the country of origin can encourage diasporas to get involved in a physical or virtual manner in promoting the country's socioeconomic development. This will also encourage return and help to retain the most skilled in the country of origin.
2. The top-down institutional support of Swiss bilateral scientific policy must respond to the systematic collaboration of Colombian scientists with their partners in the country of origin through an institutional framework which can update and regulate scientific collaboration between Switzerland and Colombia.⁸⁴
3. In a country like Switzerland, with restrictive immigration policies that prejudice migrants from developing countries, where scientific cooperation with developing countries carries no prestige and where there is still a lack of recognition of the value and the potential of Colombians in certain academic and research institutions, a greater dissemination of information regarding the position, activities and capacities of the Colombian scientific diaspora in Switzerland is necessary in order to show their importance and their potential.
4. Both the country of destination and the country of origin must encourage and facilitate the collective action of skilled migrants and give their support to the creation and good functioning of the associations and networks of the scientific diaspora and also help them to disseminate best practices and activities that can contribute to the promotion of other diaspora initiatives.
5. An attempt should be made to reverse the trend which sees the reality of the dynamic action of the Colombian scientific diaspora in Switzerland advance faster than the local public policies which recognize and take advantage of it. This can be achieved by having it included on the development agenda of the home country. Therefore, the Colombian government must improve its dialogue with the diaspora, stay up-to-date with new endeavours and projects, help gather and provide resources, and identify areas for collaboration, while encouraging diaspora associations and organizations to appropriate public initiatives.
6. Further research on scientific diasporas should be encouraged and the results broadly disseminated in order to capitalize on their potential.

84 A good first step on this regard is the mandate by the Swiss State Secretariat for Education and Research (SER) of a scientific mission to Colombia carried out by Prof. Jean-Claude Bolay, Director of Cooperation@epfl at the EPFL, on December 2008, with the result of a report showing the potentialities of scientific and technologic cooperation between Switzerland and Colombia.

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Annex 1: Socio-demographic characteristics of respondents

Code number	Nationality and residential status	Gender	Age	Category of respondent	Area of specialization	Place of work or of study / city	Years spent in Switzerland
C-01	Colombian and Swiss (naturalized)	M	52	Scientists, researchers and students at academic and research institutions (1)	Chemical sciences and engineering	Swiss Federal Institute of Technology in Lausanne (EPFL)	34
C-03	Colombian (Permit B)	F	32	(1)	Environmental sciences and technologies	EPFL / Lausanne	4
C-04	Colombian (Permit B)	M	32	(1)	Chemical sciences and engineering	EPFL / Lausanne	8 months
C-05	Colombian and Swiss (naturalized)	M	53	(1)	Computer and communication sciences	EPFL / Lausanne and HEIG-VD / Yverdon	30
C-10	Colombian (Permit L)	F	37	(1)	Biology / Immunology	Bern University Hospital / Bern	11
C-15	Colombian (Permit B)	M	33	(1)	Computer sciences / Brain-computers interfaces	Dalle Molle Institute for Perceptual Artificial Intelligence (IDIAP Research Institute) / Martigny	7
C-18	Colombian and Austrian (Permit C)	F	52	(1)	Geography	University of Bern / Bern	1 + 6 + 7
C-19	Colombian and Swiss (naturalized)	F	46	(1)	Biology / Immunology	University of Lausanne / Lausanne	17
C-20	Colombian (Permit B)	F	33	(1)	Medicine	University of Lausanne / Lausanne	3.5
C-21	Colombian and Swiss (naturalized)	M	50	(1)	Medicine	Ludwig Institute & University of Lausanne / Lausanne	18
C-22	Colombian (Permit B)	F	24	(1)	Mathematics	EPFL / Lausanne	1 year and 2 months
C-24	Colombian (Permit B, and married to a Swiss)	F	28	(1)	Environmental microbiology	EPFL / Lausanne	1
C-25	Colombian (Permit B)	M	32	(1)	Geosciences and geology	University of Bern / Bern	1 year and 7 months
C-26	Colombian (Permit B)	F	32	(1)	Soil Physics	University of Bern / Bern	4 years
C-27	Colombian (Permit B)	F	31	(1)	Geology	University of Bern / Bern	2 years and 3 months
C-02	Colombian (Permit B)	F	40	Managers and consultants in the private industry (2)	Quality and safety assurance (food industry)	Nestle Research Centre / Vevey	10
C-06	Colombian and Swiss (naturalized)	M	48	(2)	Strategic alliances (in biomedical research and pharmaceutical industry)	Novartis Institute of Biomedical Research / Basel	21
C-07	Colombian (Permit C)	F	44	(2)	Neurosciences (in pharmaceutical industry)	Hoffmann – La Roche Ltd. / Basel	8

<i>Code number</i>	<i>Nationality and residential status</i>	<i>Gender</i>	<i>Age</i>	<i>Category of respondent</i>	<i>Area of specialization</i>	<i>Place of work or of study / city</i>	<i>Years spent in Switzerland</i>
C-08	Colombian (Permit B)	M	34	(2)	Medical diagnostics and drug discovery applications (in healthcare and life sciences industry)	Ayanda Biosystems / Lausanne	12
C-09	Colombian (Permit B)	F	38	(2)	System analysis and programme development (SAP) (in SAP services company)	Teamwork Management / Geneva	13
C-11	Colombian and Swiss (by marriage)	M	39	(2)	Supply chain management (packaging industry)	BOBST Group / Prilly	14
C-12	Colombian and Swiss (naturalized)	M	41	Staff working at international organisations (3)	Strategy and policy analysis (Telecommunications)	International Telecommunications Union / Geneva	18
C-13	Colombian (Permit C)	M		(3)	Environmental regulations (Environment)	Secretariat of the Basel Convention of the United Nations Environmental Programme (UNEP) / Geneva	5
C-14	Colombian and Swiss (naturalized)	M	55	(3)	International lobbying (UNO system)	Liaison office ONGs at the United Nations Organizations (UNO) Office / Geneva	43
C-17	Colombian, Swiss (by marriage) and Spanish	F	41	(3)	Economic management and analysis	Centre for Applied Studies in International Negotiations (CASIN) / Geneva	5 + 7
C-23	Colombian and Swiss (by marriage)	F	62	Professionals in governmental institutions (4)	Training and capacity development (Youth Protection Service)	Canton Vaud / Lausanne	32
C-16	Colombian and Swiss (one parent Swiss)	F	30	Unemployed / MBA student	Architecture	Unemployed	7

Source: Tejada, Scientific Diasporas project 2007.

Annex 2: Scientific cooperation projects between Colombia and Switzerland

	Thematic	Field	Institutions		Type of cooperation	Duration
			Colombia	Switzerland		
1	Precision agriculture and the construction of field-crop models for tropical fruit species	Agro-ecological modelling	BIOTEC, CIAT, CENICAÑA, COLCIENCIAS	Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD), University of Lausanne (UNIL), Swiss State Secretariat of Education and Research (SER)	Government-Government	2005–2008
2	Biosolar Detox	Environment	UNIVALLE	Swiss Federal Institute of Technology in Lausanne (EPFL)	Institution-Institution	2004–2008
3	Programme EPFL – UNIVALLE	Environment, materials, chemistry, biotechnology.	UNIVALLE	EPFL	Institution-Institution	1996–
4	Colombo-Swiss action in nonmaterials for environmental remediation	Materials	UNIANDES – UNIANRIOQUIAUIS	EPFL	Institution-Institution	2006–2008
5	An inexpensive method to validate road transport emission inventories	Environment, resources management	UNIANDES	EPFL	Institution-Institution	2004–2008
6	Urban violence and security policies: local public and private methods of securing	Sociology	UNIANDES – Municipality of Bogota	Geneva International Academic Network (GIAN) – LaSur (EPFL) – ONU HABITAT	Institution-Institution	2004–2007
7	Reducing human health and environmental risks from pesticide use: Reducing human health and environmental risks from pesticide use	Environment	UNI BOYACA	University of Zurich (UNIZH)	Institution-Institution	2004–2010
8	Accretionary and post-accretionary cooling, exhumation and tectonic history of the central and western Andes of Colombia	Earth sciences	UNIVERSIDAD NACIONAL DE BOGOTA	University of Geneva (UNIGE)	Institution-Institution	2005–2008
9	Thermo-chronological history of the Sierra Nevada de Santa Mart	Earth sciences	INVEMAR (Instituto de Investigaciones marinas y costeras)	UNIGE	Institution-Institution	
10	A pleistocene stacked succession of volcanoclastic mass flows in central Colombia: the Quindío-Risaralda fan	Earth sciences	UNIVERSIDAD DEL QUINDÍO	UNIGE	Institution-Institution	2001–2008
11	Soft-sediment deformation in a tectonically active area: the Plio-pleistocene Zarzal formation in the Cauca valley	Earth sciences	UNIVERSIDAD NACIONAL DE MEDELLÍN	UNIGE	Institution-Institution	2007–2011

Source: Table adapted by Tejada, based on a list completed by the ACIS in collaboration with the Colombian Embassy in Switzerland, 2008.