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The impact of the EU Development Policy in Indian Higher Education: the EDUREFOM Project and the socio-economic impact of the Fourth Industrial Revolution as a case study

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Abstract

The fourth industrial revolution is expected to deeply affect the Indian socio-economic trends. Higher education is gradually acquiring significance in the agenda of development and cooperation policies. In the last decade, the European Union has supported Indian higher education institutions to enhance their role in the development of the country. The Erasmus+ has been revised to intertwine the internal and external dimensions, embedding goals related to social, political and economic spheres. To pursue this goal, under the Erasmus+ Capacity Building in Higher Education action, the EU has allowed Indian universities to ideate and develop projects addressing local needs and global challenges. Through case study and participant observation, the article assesses the EU's action in India for cooperation development initiatives engaging the Indian higher education sector. The research findings have been instrumental in delivering targeted recommendations to European policymakers to enhance the impact of the EU developmental cooperation policy in India and the EU-India relations tout court.

KEYWORDS: EU Development Policy, EU-India Relations, Capacity Building, Higher Education Studies, Fourth Industrial Revolution.

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1. Introduction

While in the past international and national development investments had primary education as the exclusive target, the acknowledgement of the socio-economic mutation led by globalization has provided a new emphasis on higher education institutions. The United Nations (2015) and the World Bank (2022; 2023) have recently recognized the role that academia can play in creating new competencies and skills in developing countries. Moreover, international cooperation among higher education institutions also represents soft diplomatic tools to enhance bilateral relations among countries (Wojciuk 2018; Wojciuk et al., 2015). Globally, European Union is the largest contributor to development assistance delivered through different instruments and programs (OECD, 2022). The extension of the scope of the Erasmus+ programme has entangled the financial support towards higher education in low and middle-income countries. As a peculiar soft power and cultural diplomacy action, the EU has considerably invested in developing Indian academia through the Erasmus+ Capacity Building in Higher Education initiative.

Following the release of technologies exploiting the potential of artificial intelligence, the world is acknowledging the challenges of the fourth industrial revolution. In the near future, several tasks in all sectors will be performed by machines. The automation of labor is likely to affect the political communities that are unable to invest resources in the technological transition. For this reason, the socio-economic impact of the fourth industrial revolution is gradually acquiring centrality in the agenda of development aid programs.

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Considering the books and articles published, the developmental role acquired by the EU in Indian academia has been underestimated in the scientific literature focusing on EU-India relations. Reflecting the belief that the Erasmus+ programme is still merely related to individual mobility grants, scholars have not yet investigated the developmental action of the EU in India. To fill the gap detected, this research aims to assess the action of the EU in India for developmental initiatives engaging the Indian higher education sector. More accurately, this work aims (i) to assess how the European initiatives have supported the Indian authority to modernize the education sector vis-à-vis the labour market transformation connected with the fourth industrial revolution; (ii) to comprehend if the required institutional infrastructure has been established by the European and Indian authorities to enhance the impact of the funds invested by the European Commission; and finally (iii) to generalize the impact of the Erasmus+ cooperation development initiatives on the bilateral relations.

The research is based (i) on the theoretical understanding of the EU's developmental action in the Indian academia and the socio-economic challenges of the fourth industrial revolution; and (ii) the observational engagement in the Erasmus+ capacity-building project EDUREFORM. Following the presentation of the methods and data utilized, the analysis and the conclusion of the study address the objective and aims of the research.

2. The action of the EU Development Cooperation in the Indian Higher Education sector

In the EU, developmental aid programs can be represented as a patchwork composed of national initiatives and joint supranational actions. As a result, the European development agenda tends to be fragmented and guided by multiple actors operating both at the national and transnational levels (Greco 2022, p. 214). Analyzing the *Global Gateway* – flagship policy of the EU in the field of Development Cooperation policy – education is included among the top five priorities for developing middle- and low-income countries. Investments in education are perceived as critical for supporting developing countries in building equitable and inclusive societies (European Commission 2021, p. 7). More precisely, the financial instruments from the EU budget should be dedicated to assisting developing countries in (i) training a higher number of students, (ii) supporting digital education and life-long learning initiatives, (iii) supporting women and vulnerable strata of the population, (iv) strengthening the networks engaging European academia and higher education institutions from developing countries (European Commission 2021, p. 7-8).

Narrowing the focus to the EU development cooperation aids designed for Indian academia, the Erasmus+ Capacity Building in Higher Education represent the initiative that better embodies the goals of the European Commission. Capacity-building projects aim to modernize, democratize and internationalize Indian universities (European Commission, 2018). The key novelty is represented by the possibility for the Indian universities to apply as lead applicants on behalf of an Indo-European alliance of academic and non-academic stakeholders. This innovation aims to address the shortcomings of local ownership hampering the effectiveness of action undertaken by European experts in the Indian scenario. The concepts of capacity building and local ownership emphasise the importance of promoting initiatives designed and coordinated by experts from targeted countries. To engage Indian experts in developing the domestic higher education environment, during the multiannual financial framework 2014-2020, the European Commission has allocated more than 246 million euros to co-finance 290 capacity-building projects in South Asian and South East Asian universities (Greco, 2022). Financed with the EU Development Cooperation Instruments and the European Development Fund, the Capacity Building in Higher Education is bifurcated into structural and joint projects (European Commission, 2020). The former envisages the participation of Indian ministerial authorities with the final goal of producing structural techno-political changes. Differently, joint projects are meant to finance tangible improvements in the Indian universities engaged in the project consortium. Projects can involve Indian and European institutions; or as a further element of internationalization, the project can also be implemented by a coalition of Indian and Asian universities. Lastly, capacity-building projects are characterized by separate macro-aims. The different strands aim to support (i) the curriculum development, (ii) the modernization of the governance, management and functioning of the universities, and (iii) the creation of bridges between the academia, the productive sector and/or the society (European Commission 2020, p. 167).

3. The socio-economic impact of robotics and artificial intelligence

The fourth industrial revolution will gradually re-modulate the labour market. As occurred with the previous industrial revolutions, artificial intelligence and robotics will generate a global socio-economic restructuration. Unlike the previous industrial revolutions, the advancement in the field of robotics and artificial intelligence will occur faster, generating deeper economic, social and cultural transformations. The introduction of new machines and software in the marketplace will sweep away jobs based on repetitive tasks conducted by low and middle-skilled workers

(Graetz & Michaels, 2015; Schwab, 2017). Drawing a general picture, the future labour market will be dominated by skilled professionals and workers able to complement, program and organize the operations of the machines (Spitz-Oener, 2006). Young people with low education levels, limited capability to analyze processes, and weak in critical thinking will be more likely to face technological unemployment (Zervoudi, 2020). Irrespective of the human capability to adapt to socio-economic mutations, the inclusion of artificial intelligence and robotics in the labour market could revive the reflections of economist John Maynard Keynes (1931/2010) envisaging the unsustainable growth of unemployment caused by technological advancement. Multiple studies (e.g., Frey & Osborn, 2017; OECD, 2017) confirm the broad impact of the fourth industrial revolution on the labour market. According to an analysis conducted by the McKinsey Global Institute (2017), half of the work activities could be automated, expecting already in 2030, 400 million displaced workers and between 3-14 per cent of the global workforce coerced to switch their occupational profiles.

Interestingly, the robotization of the labour market is likely to follow a nonlinear path. For instance, during the first stages, automation and production restructuration are likely to primarily occur in advanced economies due to the elevated cost of the new technologies. Nonetheless, in the middle term, the cost reduction – and the recovery of the investments for developing artificial intelligence and robotics devices – will allow entrepreneurs in developing countries to automate their companies. In the short term, a supplementary nonlinear path relates to the typology of workers penalized by the introduction of artificial intelligence and robotics on the work floor. As robotization of workplaces will primarily target monotonous and one-dimensional jobs, people with lower and average educational levels are much more likely to be replaced by machines (Frey & Osborn, 2017; McKinsey, 2017; Schwab, 2017). As illustrated by Martin Ford (2015; 2021), the fourth industrial revolution could accelerate the polarization between low-skills/low-salary and high-skills/high-salary workers, exacerbating socio-economic inequalities and facilitating the radicalization of pre-existing social cleavages.

In this study, the central focus is shifted to the impact of robotics and artificial intelligence on the socio-economic performance of the most vulnerable workers in low- and middle-income countries. Considering that developing countries are usually characterized by a low average age and intensive productive activities – employing a labour force with limited education and skills – the socio-economic impact of the Industry 4.0 could be sternest in low and middle-income countries. According to a report issued by the Swiss financial institute UBS (2016), robotics and artificial intelligence are expected to heavily jeopardize the competitiveness of South American and South Asian economies currently exploiting the competitive advantage of low-cost domestic labour. International institutions and post-industrial nations should support the governments of low and middle-income countries to develop strategies and financial instruments to prepare their societies for the fourth industrial revolution. Countries failing to implement long-term policies will endanger their economic sectors, jeopardizing competitiveness, and decreasing their capability of redistributing wealth (Zervoudi, 2020). The action plans should establish long-term strategies contextualized to the local realities and developmental needs (Manda & Ben Dhaou, 2019). As underlined by the World Economic Forum (2016:3), the ability to prepare the society and the national economies is a critical task that governments, civil society and entrepreneurs should handle. The final goal is to seize the opportunities of the fourth industrial revolution, mitigating the undesirable expected consequences. Failing to adopt national strategies would ultimately lead to increased unemployment and socio-economic inequalities. High level of technological unemployment would increase the domestic political and social instability, (i) magnifying the migratory trends from the Global South to the developed countries, and (ii) undermining the progress observed in the fight against poverty and social inclusion. Education and educational institutions should play a central role in supporting the transition of middle and low-income countries toward Industry 4.0. As we saw, education and skills are the main discerning variables in the study of technological employment. Tackling the uneven distribution of skills becomes the key to mitigating the socio-economic impact of the fourth industrial revolution (OECD, 2017). From this perspective, education is the solution to protect vulnerable people in low and middle-income countries.

4. The EDUREFORM project

EDUREFORM *Mitigate the Impact of Fourth Industrial Revolution on Indian Society*: *Education Reform for Future and In-Service School Teachers* is a multi-stakeholders project developing pilot activities in technological unemployment prevention. Selected under the action Erasmus+ Capacity Building in Higher Education, the project is implemented over four years by a team based in Indian-European universities, secondary schools and enterprise specialized in skill development.

Coordinated by Chitkara University, EDUREFROM is composed by an interinstitutional team of experts working at Chitkara University Punjab (India), Shivaji University (India), The Maharaja Sayajirao University of Baroda (India), The Savitribai Phule Pune University (India), Jamk University of Applied Sciences (Finland), IUL University (Italy), University of Hamburg (Germany), Chitkara International School (India),

Liceo Artistico Coreutico Musicale Candiani-Bausch (Italy), CSX Solutions India Private Limited (India). EDUREFORM aims to promote best practices capable of mitigating the detrimental effect of the fourth industrial revolution in Indian society. In the Indian education system, the EDUREFORM team identified the tendency to follow rote learning. An extensive consultation of the academic literature concluded that technological unemployment would be lower for job profiles requiring critical, analytical, creative and intercultural skills. As a result, the EDUREFORM experts identified the need to train the Indian students in skills closely related to cognition, flexibility, multidimensional analysis and management of complex situations.

To meet the needs, a series of innovative teaching and assessment pedagogies has been detected – and included in the targeted study programs – by the EDUREFORM interinstitutional team. Rather than creating new study programs addressing teacher education, the mission of the project is to retune the existing curricula vis-à-vis the challenges of the fourth industrial revolution. To pursue this goal, the pedagogical tools introduced by the project are meant to empower future Indian in-service teachers to train out-of-the-box thinking skills among Indian secondary school students. In order to enhance the short-term impact of the project, the EDUREFORM team has piloted a 3-day vocational training program targeting Indian in-service teachers. Offered free of charge and regularly organized in different geographical locations, the EDUREFORM vocational training is a lifelong learning initiative designed to encourage the adoption of innovative teaching techniques in Indian secondary schools. The innovative teaching and learning pedagogies have also been disseminated through creating an open-access online course and handbook. Considering the importance of increasing societal awareness of technological unemployment, EDUREFORM regularly delivers public events and campaigns. Organized in different locations, workshops, webinars and international conferences represent the ideal platforms to disseminate the aim of the project, engage new actors in the implementation of EDUREFORM, and promote the intellectual outputs of the project. The final mission is to encourage educators, educational institutions, civil society, and policymakers to take pragmatic actions to enhance human development, exploiting the comparative advantage that humans retain in handling complex tasks.

5. Methods and Materials: Case Study, Participant Observation and Erasmus+ capacity-building projects in India

The case study relates to the scrutiny of phenomena for which a deeper understanding is required. Although the research protocol can acquire different structures and connotations, the case analysis is always related to a phenomenon having a time and space specificity (Johansson, 2005, p. 33). Combining different research methodologies, it involves the analysis and contextualization of specific cases characterized by interconnected operative paths (Gillham, 2001; Yin, 2009). When the boundaries between the research subject and the surrounding context are not self-evident, the case study allows the development of an in-depth empirical comprehension of the phenomenon within its real-life setting (Yin 2009, p. 18). Different methodological approaches are triangulated through a meta-analytical process to provide a multidimensional understanding of the studied phenomenon. In this process of triangularization, different methods and theoretical backgrounds are applied to the data analysis (Denzin, 2009). The final aim is to break down (and then contextualize) the case analyzed to draw generalized conclusions. In this explicative process, generalization is understood as a proposition based on interconnected inferences generated by the observation of reality (Schwandt 1997, p. 57). The key task of the researchers is to develop causal explanations among the dependent variables (Sharp, 1998).

In the framework of this research, participant observation is the methodological tool enabling the analysis of the case study and its generalization. For almost a decade, the author of the study has coordinated several Erasmus+ capacity-building projects, ideated and implemented in India. This experience has allowed the author to interact with academic and institutional stakeholders, developing an insider understanding of the dynamics generated by the execution of these projects.

The analysis is restricted to the projects financed with the multiannual financial framework 2014-2020. To assess the impact of the EU development investments in favour of the Indian higher education sector, the observational investigation is based on the analysis of the role played by the capacity-building projects in promoting (i) people-to-people relations, (ii) visibility of the EU in India, and (iii) the bilateral relations between India and EU. In this normative scheme, the improvement of the bilateral relations is considered consequential to the positive impact of the capacity-building projects on the people-to-people relations and the visibility of the EU in India.

6. Results: People-to-people relations, visibility of the EU initiatives and India-EU bilateral relations

6.1 People-to-people relations

While generalizing the impact of the Erasmus+ capacity-building project, it is essential to distinguish the dynamics generated by the EDUREFORM project (and the Erasmus+ capacity-building action tout court)

between peers from the Indian and European academia, the beneficiaries and the EU officials, and the relations between officials representing the Indian and the European authorities. This distinction is required since the findings change according to the actors considered.

The opportunity for Indian universities to apply as coordinators has been highly beneficial to improve the local ownership of the projects. In the past, capacity-building projects were mainly designed by experts based in developed countries, having a brief understanding of the grassroots needs of the Indian academia. The increased local ownership had a constructive impact on the relationship between the Indian and European experts working together to achieve the project goals. More specifically, projects ideated and designed by Indian experts have enhanced the developmental role allocated to European experts. Rather than being perceived as foreign agents imposing a development model, the European experts are considered peers willing to support the modernization of Indian higher education. Hence, the enhanced local ownership has been instrumental in favouring the creation of deep people-to-people dynamics between Indian and European academic staff.

Different considerations should be drafted for the relations generated by the Erasmus+ capacity-building projects among Indian academic staff and EU officials, and equally, among Indian and European civil servants. To comprehend these dynamics, a brief excursus in the institutional governance of the capacity-building projects implemented in India is required. The European Education and Culture Executive Agency (EACEA) manages the capacity-building action. The EACEA is an executive agency of the European Commission deputed to the on-ground implementation of the Erasmus+ programme. In the case of the Erasmus+ capacity-building projects, the agency executes what has been designed within the European Commission by the Directorate-General (DG) Education, Youth, Sport and Culture in consultation with the DG for International Partnerships. In this organizational setting, the EU Delegation to India is expected to act as a bridge between the implementers of the projects and the EU officials based in Brussels. The communication between the projects' beneficiaries and the EU is handled by the EACEA. These interactions are limited due to the number of tasks assigned to the EU officials working at the EACEA. Each EACEA project officer has to parallelly supervise a multitude of capacity-building projects, and as a result, the communication is fragmented and confined to the technical aspects. There are no structured channels for the Indian and European project implementers to interact with the staff of the European Commission and the EU Delegation based in Delhi. Similarly, the European investment in Indian higher education has not been combined with the establishment of a high-level dialogue where European and Indian civil servants could jointly monitor and assess the impact of the capacity-building activities. Therefore, the funds invested by the EU in the Indian academia have generated a limited impact on the people-to-people interactions among the project implementers and the EU officials, and equally, between the Indian and European civil servants working on higher education. In addition, the absence of a structured communication channel between the project implementers and the European Union jeopardizes the transferability of the intellectual outputs of the projects. For instance, in the case of EDUREFORM, the weak peer-to-peer relations between the project implementers and the European Commission – combined with the extemporary interactions between Indian and European civil servants working on education – resulted in the lack of institutional awareness regarding the intellectual outputs of the project.

6.2 Visibility of the EU initiatives

Moving the analysis to the visibility generated by the capacity-building projects, the findings trace an interesting outlook of the operations of the EU in India. In the first place, considering the relevance acquired by digital and social media (Seib, 2012), the analysis begins with the findings from the website and social media accounts of the EU Delegation to India. Although the digital communication of the EU in India represents a positive example of diplomacy 2.0, the Erasmus+ capacity-building projects have been excluded from the communication strategy of the EU representation in Delhi. For instance, on the EU Delegation website, there are no traces of the financed capacity-building projects. Similarly, the Facebook account of the EU Delegation dedicated to the activities of the EU in India has never posted regarding the capacity-building projects supporting Indian academia. The digital promotion is limited to the mobility of students under the Erasmus+ Mundus action and to the research grants disbursed under the Horizon programme.

The visibility deficit of the Erasmus+ Capacity Building in Higher Education on the communication channels of the EU Delegation has three possible interconnected explanations. First, it has to be specified that the EU Delegation to India subcontracts to third-party tasks related to public diplomacy. The mission of the subcontractor is to promote the EU in the Indian media and society, increasing awareness regarding the activities of the EU in India. In the case of Erasmus+, the subcontractor has conducted activities highlighting the mobility of the students, marginalizing the capacity-building investments and their impact on Indian higher education. In the second place, the lack of visibility of the Erasmus+ capacity-building project can be attributed to the weak coordination between different EU actors. As emphasized in earlier studies (e.g., Gebhard, 2017), achieving coordination, coherence, and consistency among European institutions – or

within a single European institution – is a demanding task. In the case of capacity-building projects, most of the work is conducted by the EACEA. Considering the executive and technical nature of the agency, the EACEA does not have the know-how and the human resources to provide visibility to projects. To fulfil this task, the European Commission – in particular the DG Education, Youth, Sport and the DG for International Partnerships – along with the European External Action Service (EEAS) should create a structured cooperation to develop standard practices to promote and exploit the funds in favour of the Indian higher education sector. The third element that could partially explain the visibility deficit is related to the priorities adopted during the selection of the project proposals. The priorities selected by the European Commission could represent an indirect obstacle to the visibility (and impact) of the projects. The methodology adopted by the European Commission to select the project's priorities is based on a vague top-down approach. The inclusion of multiple priorities has resulted in the bottom-up emergence of projects targeting a vast array of problems related to multiple spheres. Providing a practical example, in the year when the proposal for EDUREFORM was submitted, applicant universities could propose their topic by choosing among seventeen macro-disciplines, four macro-issues on the governance of the higher education institutions, and five macro areas related to the cooperation between academia and society. In addition, returning to reflect on inter-institutional coherence, the European Commission created common priorities for all the academic institutions based in South and South-East Asia. In other words, Indian universities share the same priorities with Chinese, Thai, Indonesian and Burmese higher education institutions. As the EU strategies with Asian countries significantly vary, similarly the challenges faced by Asian universities considerably differ among countries.

As a result, the projects approved in India are scattered over a multitude of topics and challenges, and more significantly, the issues addressed by the projects are not always in line with the top priorities of the EEAS and European Council in India. Probably for these reasons, the EU Delegation to India, the institutional actor better placed to provide visibility to the capacity-building projects, might have marginalized the representation of the EU developmental action in higher education.

6.3 EU-India bilateral relations

As previously mentioned, the impact of the Erasmus+ capacity-building projects on the EU-India bilateral relations is subordinate to the people-to-people relations and the visibility generated by the EU investments in the Indian higher education sector. At this moment, the European Union is the only sovereign donor offering the chance to Indian universities to obtain financial support for projects designed and implemented in India. Nonetheless, the relationship between Indian and European policymakers in the field of education did not record an improvement in terms of interactions and synergies. For instance, during the last years, the EU and India did not conduct any high-level meetings in the field of education. In other words, the interactions between the Indian Ministry of Education and the DG Education, Youth, Sport have been rather limited. The Erasmus+ Capacity Building in Higher Education action failed to engage the Indian ministerial authorities in implementing a *structural project*, directly involving Indian governmental stakeholders in delivering structural reform. On the other hand, the Indian Education Minister and the European Commissioner for Innovation, Research, Culture, Education and Youth did not establish a formal dialogue on the EU-India cooperation in the field of education.

These factual findings underline the importance of investing additional resources in reinforcing the people-to-people relations between institutional Indian and European stakeholders, while setting down within the EU an inter-institutional strategy to maximize the impact and visibility of the capacity-building projects.

7. Discussion and Conclusions: Learnings from the implementation of Erasmus+ capacity-building projects in India

Through the Erasmus+ programme, the EU has supported Indian higher education in developing innovative initiatives by modernizing study programs, the management of the universities and financing initiatives designed to narrow the gap between academia and society. The socio-economic impact of the fourth industrial revolution will reshape the labour market and societies. In this process, developed political communities are expected to support low and middle-income countries in mitigating technological unemployment. Reflecting upon the contribution of the EU to assist Indian policymakers and higher education institutions in mitigating the socio-economic impact of the fourth industrial revolution, the study has detected scope of improvements in the selections of the priorities that implementers of the projects should pursue. The vague top-down priorities selected by the European Commission resulted in an investment portfolio where the development aids are scattered among too many issues. As a result, the funds invested by the EU to support the Indian academia for the transition toward the Industry 4.0 are not proportional to the socio-economic magnitude and the global relevance of the issue. Rather than creating common priorities for societies facing different developmental challenges, the priorities should be developed for single countries. For instance, in India, where unemployment is a phenomenon that entangles inequality and migration, the EU should have a strategic interest in financing

preventive measures to mitigate the socio-economic impact of the fourth industrial revolution.

Moving to the following aim of the study, the case study analysis has showcased the necessity to improve the institutional infrastructure behind the implementation of the Erasmus+ capacity-building. Enhanced internal coordination between the different European institutions, and a superior engagement of the Indian policymakers, would be beneficial to increase the impact and the visibility of the activities financed by the EU in close cooperation with the Indian stakeholders. A strategic role could be allocated to the EU Delegation to India. Due to the in-depth knowledge and awareness of Indian society, the EU officials based in Delhi are better placed to act as a bridge and intel unit for the project implementers, the European institutions, and the Indian authorities. Currently, the EACEA is the pivotal institutional actor deployed for managing the capacity-building projects financed in India. Considering the technical and executive nature of the EACEA, the agency lacks the mandate to handle political tasks. To fill the existing governance gap, the EU officials based in Delhi could act as process managers, empowering the different actors directly and indirectly involved in the projects to improve the performance of funds invested.

Enhancing the people-to-people relations and visibility will likely generate a virtuous circle in EU-India bilateral relations. The European Union and its member states are the major developmental partners of the Indian higher education sector. Unfortunately, until today, European investments have not yet been capitalized in an advanced partnership between the EU and India in the field of education. Improving the intra-EU coordination and providing a political control booth to the Erasmus+ Capacity Building in Higher Education, could be an effective solution to engage Indian policymakers and to exploit the intellectual outputs and the networks developed in India in the framework of the capacity-building projects.

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