

# INCLUSIVE FOURTH INDUSTRIAL REVOLUTION for Achieving the Sustainable Development Goals in Viet Nam



# INCLUSIVE FOURTH INDUSTRIAL REVOLUTION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS IN VIET NAM

*UNDP Viet Nam discussion paper<sup>1</sup> – May 2019*

**Summary:** *This discussion paper sets out the concept of Inclusive Fourth Industrial Revolution (IR4.0), its pillars for creating new growth drivers and new streams of employment, whilst ensuring no one is left behind. After a brief introduction to Viet Nam’s development context, the paper highlights the importance of making IR4.0 inclusive to ensure Viet Nam as a country is not left behind in the transition and that no person is left behind in Viet Nam, and suggests actions along the following four pillars: (i) creating new growth drivers that help create new job streams for all, (ii) strengthening capabilities across the population to create and seize new job opportunities, (iii) building a more inclusive social protection system, and (iv) investing in long-term environmental conditions for human flourishing. In the last section, the paper highlights the importance of anticipatory governance in making IR4.0 inclusive. It suggests that government, in anticipating the increasing complexity of the economy and the depth of transition required to achieve an inclusive IR4.0, should undertake actions including: (i) building a movement of change to support the transition towards inclusive growth, (ii) developing the capacity within government to anticipate and adapt to the complexity of IR4.0 by applying an anticipatory experimentation approach in policy-making processes, developing “grey policies” to promote distributed experiments and innovations among all relevant actors and testing regulatory innovations that facilitate scaling and (iii) applying development finance sandboxes for generating and experimenting with innovative financing solutions to achieve the Sustainable Development Goals (SDGs), including new multi-stakeholder co-financing mechanisms and tools for increasing government revenue.*

## 1. INTRODUCTION:

How to ensure Viet Nam’s growth continues to be rapid and sustainable? How to ensure all its citizens continue to actively participate in, and benefit from, the country’s growth from its ‘lower middle-income’ stage of development into the future? How to balance all these issues in the context of IR4.0 and the acceleration of new technologies? These are among the key questions facing Vietnamese policy-makers. The search for suitable answers is, therefore, key in the process of preparing the country’s IR4.0 strategy and 10-year Socio-Economic Development Strategy (SEDS 2021-2030), against the background of the SDGs.

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<sup>1</sup> The discussion paper is drawn from the presentations of Mr. Indy Johar, Dark Matter Laboratories, UNDP consultant, prepared for the UNDP-Theoretical Council-Viet Nam Academy of Social Sciences seminar on IR4.0, Ha Noi, 2018; and some other sources referenced in the text.

The United Nations Development Programme (UNDP) has been closely cooperating with the Government of Viet Nam (GoV) in the search for such answers. The international conference on inclusive growth hosted in 2013 by UNDP, Viet Nam Academy of Social Sciences (VASS) and the Ministry of Foreign Affairs of Viet Nam provided the first opportunity for policy-makers and researchers to discuss the concept of ‘inclusive growth’. The UNDP-VASS National Human Development Report (NHDR) on Inclusive Growth, launched in February 2016, provided an in-depth analysis of the inclusiveness of Viet Nam’s past growth models and identified challenges in graduating to the new stage of development. UNDP introduced the concept of ‘Inclusive IR4.0’ at the joint GoV-UNDP Summit on Industry 4.0 and subsequently in a series of policy discussions on IR4.0 in Viet Nam during 2018-2019.<sup>2</sup>

This discussion paper aims to introduce in more detail the concept of ‘inclusive IR4.0’, together with an understanding of the related concept of ‘anticipatory governance’, as well as discusses several areas of actions as inputs to the formulation of the country’s IR4.0 strategy and SEDS 2021-2030 – both key documents providing strategic direction to ensure Viet Nam is not left behind and no one in Viet Nam is left behind in the IR4.0 era.

## 2. VIET NAM’S DEVELOPMENT CONTEXT

One of the most striking features of Viet Nam’s growth to date is the extent to which it has been inclusive. As the UNDP-VASS NHDR 2016 indicates, economic growth has been relatively high from the late 1980s to 2015 and critically has been accompanied by: (i) relatively low inequality as measured by different indicators, such as Gini coefficient, Palma and quintile ratios and (ii) with demonstrated improvements in income distribution. The inclusive quality of Viet Nam’s growth has been key in its great success in poverty reduction, recognized by the international community.

In the transition to its new development stage, Viet Nam faces some key risks and challenges, including challenges of economic uncertainty, “re-shoring manufacturing” back towards developed economies, “trade wars” accompanying rising nationalism, the effects of climate change and IR4.0-induced changes in global value chains, employment and human development. In addition to such challenges, Viet Nam must address a number of specific issues related to balancing continued growth, maintaining a focus on inclusion, while pushing for greener growth.

Firstly, Viet Nam must address the *low-middle income trap risk*. The challenge here is to transform the country’s growth model from exploiting natural resources and cheap/low skill labour to a new

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<sup>2</sup> The first (Central Commission for Economic Affairs (CCE)-UNDP) IR4.0 forum in November 2016 helped raise awareness of IR4.0 opportunities and challenges and the Ministry of Industry and Trade (MOIT)-UNDP survey helped shed light on the IR4.0 readiness of industry enterprises. The concept of inclusive IR4.0 was briefly introduced via the participation of Sophia the robot (UNDP Innovation Champion) at the IR4.0 Summit in 2018, UN statement (which UNDP made on behalf of the UN) at the 2018 Viet Nam Reform and Development Forum, UNDP-Ministry of Planning and Investment (MPI)-CCE and UNDP-VASS-Theoretical Council of the Party seminars on inclusive IR4.0 in 2018 and 2019.

pathway with enhanced productivity, value addition, competitiveness and environmental sustainability as the new key drivers of growth, while continuing to create employment with higher productivity and income for Vietnamese people. This challenging transformation, often observed in economies shifting from early stage factor-driven growth to efficiency-driven growth, is necessary as Viet Nam faces serious competition from other countries in labour and natural resource intensive industries, while the expectations of its citizens are rising.

Secondly, Viet Nam must better prepare for, and adapt to, the *impact of IR4.0 on drivers of growth and job creation*. Accelerating IR4.0 offers both opportunities and risks in terms of future employment creation, as Viet Nam embarks on new growth pathways. It is anticipated that automation and artificial intelligence (AI) will displace jobs in several sectors that have been driving Viet Nam's growth.<sup>3</sup> The ILO 2016 report "*The future of jobs at risk of automation*", suggested 70% of jobs in Viet Nam were at risk of automation. Sectors with a very high proportion of jobs at risk of automation include: agriculture, forestry and fisheries (83.3% at risk), manufacturing (74.4%), food and beverage (68%), garment (85%), electronics (75%), wholesale, retail and repair of motor vehicles (84.1%), service sector (approximately 32%), retail (70%), hotel and banking (slightly above 40%). The Oxford Economics and Cisco report "*Technology and the future of ASEAN jobs: The impact of AI on workers in ASEAN's six largest economies*" (September 2018) forecasted that 7.5 million jobs (largely in agriculture, manufacturing, wholesale and retail) would be displaced by AI in the next 10 years in Viet Nam. At the same time, the report anticipated that millions of new jobs with different functions (also in manufacturing, wholesale, retail, hotels and restaurants) would be created through what the report called the 'income effect'. Thus, the net job loss is about 1.7 million, 90% of which will be in the agricultural sector.

Thirdly, transitioning to the next development stage and accelerating IR4.0 also present risks in *rising inequality and weakening resilience*. Higher returns to skills and innovative ideas, in addition to returns to capital and productive assets, will mean the increased risk of leaving behind those who do not have access to skills, innovative capabilities and capital. As the UNDP-VASS NHDR 2016 indicated, the inclusive growth model of the recent past led to the fast reduction in the poorest population segment (those with less than 2 USD 2005 PPP per person per day), and the emergence of a very large middle group, with around 70% of the population at 'near-poor' levels (2 and 4 USD PPP per day) or at a 'low middle income' (4-10 USD PPP per day). While the income of families within the 'low middle-income' group helps to make ends meet, these families are not eligible to receive support from social services and social protection and assistance policies, which mainly target the poorest and formal workers. For this reason, the NHDR 2016 named this group as the "missing middle". Particularly relevant is that the income for this group is insufficient to cope with shocks, take risks to invest in new business opportunities and to reskill themselves to adapt to new streams of work and changes in the nature of jobs. This is an evident risk factor in an uncertain economic and environmental future.

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<sup>3</sup> *Technology and the future of ASEAN jobs: The impact of AI on workers in ASEAN's six largest economies*, Oxford Economics and Cisco, (September, 2018): [https://www.cisco.com/c/dam/global/en\\_sg/assets/csr/pdf/technology-and-the-future-of-asean-jobs.pdf](https://www.cisco.com/c/dam/global/en_sg/assets/csr/pdf/technology-and-the-future-of-asean-jobs.pdf)

Fourthly, we know increasingly more about the *risks associated with environmental degradation and climate change* and how they can impact on long-term prospects for prosperity. The long-term drivers of human flourishing include preconditions within the natural environment, such as successfully addressing air and water pollution and the effects of climate change, because of the risks to human health and cognitive functions. The IPCC Special Report on Global Warming of 1.5°C (SR15) declares in the starkest possible terms “that we have 12 years to fix our addiction to fossil fuels and drastically reduce total carbon emissions”; and systemic risks include impacts of climate change on the nutritional value of food,<sup>4</sup> the impacts of rising CO2 levels on our memory, concentration and decision-making abilities,<sup>5</sup> the impacts of air pollution on cognitive ability,<sup>6</sup> as well as emerging evidence of pollution impacts on obesity<sup>7</sup> and mental health.<sup>8</sup> Given the increasing importance of cognitive ability and creativity in the context of IR4.0 and a higher-value economy, as well as evident costs of the health risks associated with such impacts, deep awareness of the systemic long-term interdependence between human and ecological flourishing should be a foundational driver of governance in terms of decision-making, investment and regulation.

Whether Viet Nam will avoid these key risks depends very much on: (i) how Viet Nam’s private enterprises, which currently consist of mainly MSMEs and operate in the informal sector (95% of Vietnamese firms are MSMEs and more than 70% of Vietnamese workers are engaged in the informal sector), enhance their *productivity and competitiveness* and (ii) how *private sector investment* will increase with growth in entrepreneurship, innovative applications of IR4.0 and green technologies creating new drivers of growth as well as higher-value and greener practices and jobs. This will also require (iii) an approach to government and governance (including investment and regulation) that enables *distributed innovation* right across diverse sectors of the economy, across Viet Nam’s diverse geography and right across its population.

In particular, whether Viet Nam’s future growth will continue to be accompanied by relatively low levels of inequality that ensure no one is left behind, will depend very much on:

- Firstly, how Vietnamese children and workers are equipped with ‘21st century skills’ to create new drivers of growth and seize job opportunities that emerge
- Secondly, how Viet Nam’s social protection system together with health and education services can help: (i) protect those who cannot be as easily reskilled, (ii) build resilience against income and health shocks, thus preventing those who are vulnerable, in particular the near-poor and low-

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<sup>4</sup> <https://www.politico.com/agenda/story/2017/09/13/food-nutrients-carbon-dioxide-000511?platform=hootsuite>

<sup>5</sup> <https://www.independent.co.uk/environment/climate-change-carbon-dioxide-intelligence-greenhouse-gas-more-stupid-ucl-study-a8674706.html>

<sup>6</sup> <https://www.theguardian.com/environment/2018/aug/27/air-pollution-causes-huge-reduction-in-intelligence-study-reveals>

<sup>7</sup> <https://www.nature.com/articles/s41366-018-0089-y>

<sup>8</sup> <https://www.sciencedirect.com/science/article/pii/S016517811830800X>

middle income groups, from falling into poverty during shifts in the economic context and (iii) promote these groups to further develop. In other contexts, the importance of having both such ‘enabling’ and ‘insuring’ institutions has been recognized as being crucial in times of rapid economic and technological change.<sup>9</sup>

### 3. MAKING IR4.0 INCLUSIVE

In line with the Human Development and Inclusive Growth concepts, making IR4.0 inclusive is a transition process in which all people could actively participate in, contribute to and benefit from IR4.0. The human development concept which is fundamentally about people-centred development or development that is for the people, of the people and by the people, is a key principle in making IR4.0 inclusive. It means humans should be treated as the source of creative value and not simply as a unit of labour, as was the case in previous industrial revolutions (IR1.0, IR2.0 and IR3.0). Furthermore, people should not be treated merely as overheads to production, which current developments in IR4.0 suggest will be the case for the near future economy.

The key pillars of making IR4.0 inclusive include:

- (i) Maximizing opportunities IR4.0 offers for creating new growth drivers that help create new job streams for all
- (ii) Strengthening the capabilities of people for creating and seizing new job opportunities
- (iii) Building a social protection system that can protect those who cannot adapt as easily to the new job functions, preventing people and communities from falling behind and strengthening opportunities for those with the potential to further develop
- (iv) Investing in long-term environmental conditions for human flourishing, which increases in importance as the cognitive and creative requirements on humans grow, given the growing role of machines in routine and lower skilled jobs.

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#### 3.1 DRIVERS OF LONG-TERM GROWTH: SEEDING THE LEAD MARKETS OF TOMORROW

It is important to forecast the country’s growth drivers that will be affected by IR4.0 and the jobs at risk of being replaced by AI and automation, to explore potential negative impacts and formulate actions for mitigation. It is even more important to anticipate opportunities IR4.0 and the new economy will present in creating new long-term, sustainable growth and higher-value employment drivers and, improving the value as well as the efficiency of production, and making jobs more productive and meaningful for all.

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<sup>9</sup> <https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/ideas-and-institutions-a-growth-story-speech-by-andy-haldane.pdf?la=en&hash=BDF87B794BCE9110D264BF955E43C1D7A533E593>

Besides the increasing growth of sectors such as e-commerce<sup>10</sup> and information technology (including software industry)<sup>11</sup>, Viet Nam is also seeing increasing numbers of new hi-tech start-ups and application of IR4.0 technologies by Vietnamese firms. While the share of firms applying IR4.0 technologies remains rather low, such applications have the potential to help firms achieve higher IR4.0 readiness levels and increase their productivity and competitiveness.<sup>12</sup> Available data and forecasting research also indicate the emergence of growth and jobs in new ‘sectors’ such as organic farming, the circular and care economies (in the era of an ageing population), renewable energy and environmental conservation and restoration. International researchers believe that many more of such new ‘sectors’ will be created if the innovation and creativity of all people and enterprises is unlocked and effectively mobilized, and by other new demand effects (such as the ‘income effect’ cited in the above-mentioned Oxford Economics – Cisco study). This requires vibrant innovation ecosystems, sound technological infrastructure, effective human development and reskilling programmes. Such innovation ecosystems are co-dependent on approaches to government and governance (including both investment and regulation) that enable distributed innovation right across diverse sectors of the economy, across Viet Nam’s diverse geography and right across its population. For example, regulatory ‘sandboxes’ that enable the agile exploration of emergent technologies and their governance/regulatory implications in demarcated ways can spur innovation, while at the same time managing risk.<sup>13</sup>

Another important emerging trend in new growth and job creation may offer useful guidance for Viet Nam in making its own trajectory in achieving inclusive growth and inclusive IR4.0, namely the *Craft Revolution 4.0*.<sup>14</sup> In IR2.0 and IR3.0, the organization of production in large factories was characterized by mechanization (IR2.0) and digitalization (IR3.0). It led to centralized and linear production patterns, high factory setup costs, low production costs, thanks to the high economies of scale; the process was specialized in singular and one-size-fits-all products, with little resilience to demand drops. Empowered by IR4.0 and human creativity, we are increasingly seeing emerging decentralized production processes that are digital, distributed, smart and circular. Factory setup costs can be low and production costs kept very low (thanks to local innovative solutions), and processes can be organized for diverse, on-demand and mass-customized products. In these decentralized systems, production is organized in small units and responsive to demand changes - similar to the

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<sup>10</sup> <https://news.zing.vn/tang-truong-30-doanh-thu-tmdt-viet-nam-nam-2018-vao-top-6-toan-cau-post911781.html>, citing Statista, indicated Viet Nam’s e-commerce revenue growth was 30% (y.o.y) and its e-commerce market ranked sixth in the world (after China, the US, UK, Japan and Germany) in 2018.

<sup>11</sup> During recent years, information technology sector has been one of the fastest growing sectors in Viet Nam (in the first six months of 2018 the sector’s y.o.y revenue growth was more than 16% - <http://kinhtevn.com.vn/cong-nghe-thong-tin-tiep-tuc-da-tang-truong-34179.html> and revenue growth of software production was 13.8% in 2018 - <https://ictnews.vn/cntt/xuat-khau-phan-mem-viet-nam-nam-2018-uoc-dat-3-5-ty-usd-doanh-thu-177818.ict>).

<sup>12</sup> UNDP-MOIT IR4.0 readiness survey among industrial firms in Viet Nam (2018).

<sup>13</sup> For example see the UK’s Financial Conduct Authority’s approach to sandboxes and ‘tech sprints’ in the context of financial technology <https://www.fca.org.uk/firms/regulatory-sandbox> / <https://www.fca.org.uk/events/techsprints/aml-financial-crime-international-techsprint>

<sup>14</sup> As named in Indy Johar’s presentation to UNDP in 2018

craftsmanship era, but deeply connected using the digital production and organization methods that IR4.0 offers. The simplest example of the new (4.0) craftsmanship form of production organization is the small enterprises that make and sell their products through e-commerce platforms. Many of these units are functioning in Viet Nam, such as “Alibaba villages” operating in China. Another interesting example is the Wiki Housing initiative in Birmingham, United Kingdom. Small construction firms are producing building materials using IR4.0 technologies, such as 3D printing and locally available materials, with factory setup costs less than one-third than large-scale building factories, by sharing standard digital designs, assembling methods and connecting across an e-platform network. This enables self-assembling highly customized houses and furniture at a fast speed with low production costs.

**BOX 1: NEW CRAFTSMANSHIP - A POSSIBLE FUTURE SCENARIO FOR GARMENT PRODUCTION ORGANIZATION IN VIET NAM?**

Currently, the garment industry is Viet Nam’s top employing industry (and second largest manufacturing export sector). In 2016, formal garment enterprises alone employed around 1.4 million workers. Labour productivity is low and labour productivity gaps with comparator countries, such as China and India, is widening. At the same time, wage growth has been higher than labour productivity growth and is damaging Viet Nam’s garment sector’s international competitiveness. Historically, garment firms operating in developing countries, such as Viet Nam, focus on the final stage of physical production (based on large volume orders from foreign firms) using the ‘comparative advantage’ of low-skill labour, while preproduction (such as design, branding and material supply) and postproduction (such as marketing and sales) stages are under the control of foreign firms from developed countries, such as the United States and European Union member states. As countries develop, the final production stage on large volume orders from foreign firms will shift to other countries where the wage of low-skill labour is more competitive and the final production stage on smaller volume orders for more customized apparels, which require higher skills and less workers, will be the main operation in lower middle/middle-income countries. This, together with the possibility of automation taking over the simple/repetitive jobs, presents the major risk of job losses in Viet Nam’s garment sector in the next few decades. The emergence of the above-mentioned ‘4.0 craftsmanship’ can provide a new direction for Viet Nam’s garment enterprises, especially MSMEs, by connecting them in a digital network and to markets through e-commerce platforms, enabling them to continue creating jobs with higher value addition and productivity for making customized products (in all preproduction, production and postproduction stages), initially to serve the large and increasingly more affluent Vietnamese and regional markets, but also potentially beyond.

*Source: UNDP study on productivity and competitiveness of Vietnamese subsectors - part 1 manufacturing, Ha Noi, April 2019.*

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**3.2 HUMAN(E) DEVELOPMENT: STRENGTHENING HUMAN CAPABILITIES FOR THE NEXT ERA OF WORK**

As IR4.0 accelerates, new drivers of long-term growth and higher value employment with new functions emerge together with a high level of uncertainty. In pursuing inclusive IR4.0, providing people with ‘21st century skills’ will be essential for enhancing their capability for creating and seizing new job opportunities. Globally, automation and AI in combination will fundamentally reconfigure the machine-human relationship, thereby redirecting the role of human contributions to our future society and economy. The potential impact on Viet Nam’s labour market has already been shown. We need to enable the workforce to fulfil meaningful roles, not ‘bad robots’ which sometimes is referred to as people in jobs that may soon be outsourced to machines, and thereby in a condition of insecurity and wage suppression. This future heralds a rethinking of human development across the world: we have to remake the ‘school’, from early years to primary and secondary schooling as

well as vocational studies, higher education and life-long learning, for the age of automation, radically growing people's capacity to be the authors of their own lives with the social skills and emotional intelligence that truly set us apart from machines. This is a crucial 'enabling infrastructure' in strengthening human capabilities for the next era of work.<sup>15</sup>

For Viet Nam, this requires a transition in the country's education system, in particular vocational training system and institutions, to a new model that: (i) facilitates the growing of capabilities such as creativity, collaboration, critical thinking and adaptability and (ii) is open, contextualized, networked and promotes action-oriented learning. The model should aim to build open communities of practices and a hybrid of classroom, apprenticeship and online learning. It will involve elements of peer-to-peer learning, whilst also leveraging technology, to establish learning networks (built on 'new craftsmanship' networks), and lifelong learning not just for 'hard skills', but also for social and creative skills.

In the transition to the new model, a priority will be to transform early childhood, tertiary and vocational training education levels. Currently, these see relatively low levels of access and a certain degree of inequality (higher access of wealthier groups and very low access for poorer groups, especially ethnic minorities) to the ones with much larger coverage and more equal access.

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### **3.3 INVESTMENT IN THE SOCIAL PROTECTION SYSTEM TO UNLOCK POTENTIAL ACROSS SOCIETY**

Anticipating IR4.0 to induce large-scale shifts in growth drivers for employment, together with the inherent uncertainty that comes with such a shift, demands a transformation of not only the education system, but also the social protection system. As crucial 'insuring infrastructure' at a time of disruption and risk, new social protection systems must be more inclusive, with much wider coverage and higher levels of benefits. The new system should provide adequate protection for livelihoods of those, likely middle-aged and elderly, who cannot easily adapt to the new job functions. At the same time, the system should offer support to those that face risks of falling behind, to prevent negative impacts such as mass sectoral/regional unemployment, (mental) health impacts or even social unrest, as well as supporting those with potential to take risks in investing in learning new skills and creating new businesses. In other words, social protection systems should be seen as an investment to unlock potential across society as well as manage social risks.

As recommended in NHDR 2016, a priority needs to be placed on expanding the coverage of the social, unemployment and health insurance systems as well as social assistance to the currently 'missing middle' groups – the near-poor and low middle-income groups. This group consists of a large share of the population working in the informal sector who are economically insecure, but at the same time play a key role in transitioning to the more inclusive growth model and in making IR4.0 inclusive. The transition of the current 'bi-polar' system, which prioritizes the poorest and wealthier

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<sup>15</sup> <https://www.bankofengland.co.uk/speech/2018/andy-haldane-speech-given-at-the-oxford-guild-society>

population groups and misses the middle, to a more inclusive system can be supported by the following actions:

- (i) Gradually expand the coverage and increase the level of benefits of 'categorical targeting'.<sup>16</sup> social assistance schemes currently operational - such as social pensions and social assistance programmes for young children, mothers and persons with disabilities, and link these with social insurance schemes in a multi-tiered social protection system. This could build on strong initiatives of some cities and provinces, such as Ha Noi, Bac Ninh and Ho Chi Minh City, in expanding the coverage and increasing level of benefits of the social pension scheme. Such schemes may eventually serve as the foundation for development of a universal basic income (UBI) scheme that some countries, such as Canada, Finland, India, Namibia and the United States, are piloting at sub-national level.
- (ii) Develop multi-tiered reskilling programmes and unemployment benefits with the aim to increase coverage among the current 'missing middle'.
- (iii) Continue good progress in achieving the universal coverage of health insurance.
- (iv) Experiment and scale-up the e-transfer of social assistance payments, such as payment of pensions and social transfers, in close cooperation with initiatives on e-banking and e-payment, as well as e-identity, e-business registry and e-tax. Such efforts, as experienced for example in India, will not only make the administration of social protection systems more efficient, but also promote financial inclusion, enhance the environment for private sector development, accelerate transition to formalization and ease tax collection.

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### **3.4 ENVIRONMENTAL CONDITIONS FOR HUMAN FLOURISHING: ACTING ON SYSTEMIC INTERDEPENDENCE**

Viet Nam is sometimes seen as an exception to the rule that economic development and progress on key social indicators inevitably leads to the progressive transgression of ecological boundaries.<sup>17</sup> However, the pursuance of fast economic growth, which was the top priority of "Doi Moi", came with a price: natural resource and environmental degradation, causing ill-health, additional costs to the economy and risks to social stability. Viet Nam, while currently ranking 27<sup>th</sup> in the world for greenhouse gas emissions with 0.72% of global emissions that are increasing fast, will soon become a major emitter if the economy continues to be heavily dependent on fossil fuels. Because 70% of its population and economic growth zones are concentrated in coastal and

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<sup>16</sup> Categorical targeting schemes focus on certain categories of population based on their vulnerabilities, while means testing schemes target groups of the population with income below certain thresholds. As such, categorical targeting is closer to the principle of universal targeting, which is also based on vulnerabilities. In addition, thanks to the simplicity of criteria of categories (such as elderly above 80 years of age, children under 6 years, pregnant women, etc.), categorical targeting presents easier and much more transparent solutions (and less errors) in identifying and reaching targeted groups than means testing, which involves large inclusion and exclusion errors (slightly higher than 50% in Viet Nam, one of the lowest error levels internationally).

<sup>17</sup> <https://www.nature.com/articles/s41893-018-0021-4erosion>

lowland areas, the country faces great risks of the effects of climate change and natural disasters.<sup>18</sup> This necessitates forging a growth model that maintains and even strengthens ecological assets, reducing pollution and habitat destruction, whilst mitigating and adapting to climate change.

There is recognition that this requires the strengthening of Viet Nam’s governance capabilities, as “significant gaps in the ability to conduct long-term planning in general complicate efforts to set clear long-term targets (for mid-century and beyond) with respect to climate in particular, underscoring the need for capacity building, where criteria and targets for environment protection and green growth remain general and hard to monitor, report and verify, leading to limitations in the budget allocation process.”<sup>19</sup>

Building on three previously existing programmes, the National Strategy on Climate Change (NSCC - 2011), Viet Nam Green Growth Strategy (VGGS - 2012) and SDG National Action Plan (SDG - 2017), it is recognized that full integration of climate into existing development practices is a first step to aligning near-term and long-term climate strategies, but there are challenges to the model of central planning in the context of fundamental uncertainty and resource constraints.<sup>20</sup> This requires innovation in exploration of possible solutions, planning, coordination, capability building, innovative financing and cross-sector collaboration. Anticipatory, adaptable and agile governance is central to this and the challenge of climate change adaptation and mitigation, alongside broader environmental protection, may actually be a key innovation opportunity for governmental change in terms of dealing with complexity, interdependence between policy objectives and risks, and cross-silo working. Such efforts are necessary for Viet Nam to embark on a transformational process toward greener development pathways, that is based on more sustainable utilization of natural capital and renewable energy, environmental-friendly production and consumption patterns, promotion of sustainable development social norms and empowerment of citizens and private sector in undertaking innovative actions, including in policy formulation and monitoring.

#### 4. ANTICIPATORY, ADAPTABLE AND AGILE GOVERNANCE IN MAKING IR4.0 INCLUSIVE<sup>21</sup>

The acceleration of IR4.0 involves unprecedented rates of change, in creating business opportunities and developing new job streams, exposing new vulnerabilities and demanding new skillsets. It adds substantially to the complexity of Viet Nam’s fast-growing and increasingly more sophisticated economy and takes place against the context of unprecedented global technological and environmental change. As a result many ‘grey zones’ emerge, as evidenced by on-going debates in

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<sup>18</sup> <https://www.wri.org/climate/expert-perspective/aligning-near-and-long-term-planning-vietnam-meet-goals-paris-agreement>

<sup>19</sup> <https://www.wri.org/climate/expert-perspective/aligning-near-and-long-term-planning-vietnam-meet-goals-paris-agreement>

<sup>20</sup> <https://www.wri.org/climate/expert-perspective/aligning-near-and-long-term-planning-vietnam-meet-goals-paris-agreement>

<sup>21</sup> This section also draws from: Yuen Yuen Ang, 2016. *How China Escaped the Poverty Trap*. Cornell University Press, Ithaca, NY: 2016, (ii) and Yuen Yuen Ang’s presentation “Experimentation approach for promoting entrepreneurship and innovations: lessons and experience from China” made at joint VASS-Theoretical Council-UNDP seminar on 9 April 2019 and (iii) Yuen Yuen Ang’s “3 fallacies of embracing complexity” - UNDP blog <https://www.undp.org/content/undp/en/home/blog/2018/3-fallacies-of-embracing-complexity.html>.

many countries on: (i) defining the nature of Uber as a business in providing transportation or driver-customer connection services (and related regulations, including applying taxes, that would be fair to traditional taxi businesses), (ii) commercialization of gene-modified products (related to their health safety), (iii) ethics of (and related regulations on) applying gene-modification technologies on humans, (iv) taxing trans-national corporations and such as Google and Facebook and (v) balancing the use of collecting and use of big data and protecting privacy.

In this context, given the many unknowns and at the same time the high speed of change, anticipatory, adaptable and agile governance is needed to make IR4.0 and continued growth inclusive and sustainable. It requires a transition from continually pursuing a ‘red-line’ approach in defining and implementing regulations and policies that are traditionally based on clearly defined “positives” and “negatives” to regulate “good” or “bad” behaviours of actors in the markets and society, toward adopting a new, “mixture of grey and red” approaches.

The anticipatory “mixture of grey and red” approaches are based on the acknowledgement of: (i) complexity and unknowns, (ii) difficulties in neatly “organizing” governance capacity (at legal, policy and institution/individual levels) implying the need to build the capacity of government by embracing a process that involves learning from experimentation, with fast feedback loops to determine what works and what does not and (iii) creativity of all actors in markets and society as a crucial factor in generating and implementing innovative solutions for creating new growth drivers and decent work, and balancing the tremendous opportunities provided by IR4.0 against the real possibility of deepening inequality.

Anticipatory, adaptable and agile governance is central to creating the ecosystem for undertaking such actions in dealing with complexity, interdependence between policy objectives and risks, and cross-silo working. Anticipatory, adaptable and agile governance, with the aim to empower people to change systems – through exploration, experimentation and demonstration – to enable viable alternatives at scale, will need to engage all people and institutions in a process of active learning and generating innovation as two sides of the same coin: when leveraged together, they are the most effective means to catalyze transformation.<sup>22</sup> It will help deliberate formulation of experiments to better understand policy, governance and investment options to deal with risk, and integrating such experiments in a strategy for innovation.

Key actions in the transition towards anticipatory regulation and policy-making include:

Building a movement of change to support the transition towards inclusive and sustainable growth and achieving SDGs: IR4.0 and circular economy forums and exhibitions, youth innovation start-up festivals, and many more events and communication campaigns to promote entrepreneurship and innovation, with clear messaging from the government on actions and nurturing development

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<sup>22</sup> “Transformation, In Time”, the 2019-2022 Strategy of EIT-Climate KIC, a knowledge and innovation community established and funded by the European Institute of Innovation and Technology (EIT) in 2010, [https://www.climate-kic.org/wp-content/uploads/2019/02/20190201-ClimateKic-Brochure-Final\\_nospreads.pdf](https://www.climate-kic.org/wp-content/uploads/2019/02/20190201-ClimateKic-Brochure-Final_nospreads.pdf) - p2

represent concrete examples of actions that GoV has been undertaking for building the movement of change. Such communication, especially backed up by concrete actions and collaborative governance, will not only help build a movement of mass innovation and entrepreneurship<sup>23</sup> needed for distributing innovation across diverse sectors of the economy, geographical areas and population groups, but will also help generate the support needed for undertaking the transition toward applying new regulation and policy-making approaches. Actions are needed to: (i) form and communicate the longer term visions and goals as well as broad strategic directions to realize the visions and (ii) build the “experimentation” culture in government, business and among the public.

#### Steps toward regulatory innovation:

- (i) *Making “grey policies” to foster experimentation and innovation among different actors:* To treat people as the source of creativity and new growth drivers, policy formulation will need to be based on the fundamental principle of the deliberate opening of the scope for different actors to undertake risks and experimentation in well-defined grey areas. Building on the relatively high level of social equality and decentralization currently enjoyed in Viet Nam, the central government - while providing greater room for actors to undertake innovation and experimentation (including through not over-planning and over-intervening), will need to play a stronger “conductor” role for orchestrating the decentralized efforts to achieve the national development goals. Policies and implementation guidance, while provide “mixed red and grey” frameworks - boundaries for experiments and spaces for innovation, need to be accompanied by very clear goals, necessary support and incentives for achieving the goals, such as tax incentives for creating new jobs while also addressing social and environmental problems.<sup>24</sup> The control and oversight of government in implementation of experiments will need to focus on enforcement of boundaries, risk identification and management together with societal stakeholders, close monitoring (for example, by data rich oversight and collecting real-time citizens’ feedback) and fast feedback loops (real-time learning) for timely adapting the guidance frameworks in order to achieve mass innovation and scale-up the successful experiments.
- (ii) *Applying experimentation approaches in the policy-making process itself:* By applying “regulatory sandboxes” for prototyping and testing digital regulation through experimentation. This often involves central government defining zones for regulatory

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<sup>23</sup> Recognizing innovation as the primary driving force of development and a strategic pillar of the modern economic system, the Chinese Government places high importance on (mass) innovation and entrepreneurship. The September 2018 meeting of China’s State Council decided to upgrade the mass entrepreneurship and innovation campaign (to bring it to a higher level and wider scope) through concrete actions, such as further streamlining administration and delegating powers, making it easier to start new businesses, advancing reforms for simplified enterprise deregistration, formulating detailed policy incentives to encourage scientific researchers to start their own businesses, as well as enhancing financial support and tax incentives for entrepreneurship and innovation, pilot provision of long-term use rights or even ownership to researchers for their job-related scientific or technological achievements and compensation to cover loan risks in the commercial application of such achievements, sources: China’s mass entrepreneurship and innovation campaign, [http://www.xinhuanet.com/english/2018-09/06/c\\_137450275.htm](http://www.xinhuanet.com/english/2018-09/06/c_137450275.htm); M.S. Reshetnikova “Innovation and Entrepreneurship in China”, *European Research Studies Journal* Volume XXI, Issue 3, 2018; [https://www.ersj.eu/dmdocuments/2018\\_XXI\\_3\\_41.pdf](https://www.ersj.eu/dmdocuments/2018_XXI_3_41.pdf)

<sup>24</sup> Within a mission-driven “directed improvisation” (“Linh hoạt sáng tạo có định hướng mục tiêu”), the “directed improvisation” term was coined by Yuen Yuen Ang (see footnote 20 above).

experimentation - provisional rules - for trial implementation at local level, establishing a systematic process of monitoring and thorough evaluation for learning lessons, which will be fed into measures to adapt the provisional rules accordingly, and establish more complex networked experiments to address such complex issues. Viet Nam's cities, such as Ha Noi, Ho Chi Minh City and Da Nang, with the confluence of urgent and emerging needs, agglomeration of human and institutional capital and greater degree of capacity and agility within local governments, present fertile environment for anticipatory governance experimentation.

(iii) *Building capacity of government to deal with complexity and uncertainty*: A number of critical steps in building government capacity to deal with complexity, anticipate, adapt and remain agile, could include:

- a) developing the culture of client, including citizens and enterprises, oriented service provision in the government apparatus;
- b) introducing a culture of collaborative experimentation, which involves accepting and learning from failures, shared accountability and the practice of risk management, rather than the culture of developing and complying to rigid rules;
- c) strengthening capacity for foresight, defining zones for regulatory experimentation and oversight;
- d) mapping local solutions and innovations for scaling-up and establishing physical lab spaces, including Fab Labs and City Labs, for regulatory experimentation and civic innovation;
- e) applying tools for open source documentation and open inquiry and civic engagement (such as AI-powered chatbots – similar to the initiative piloted in Da Nang with UNDP support - for administrative service provisions and open enquiry or smartphone apps for collecting real-time citizens' feedback);
- f) conducting technology assessments - an anticipatory governance instrument, which engages different stakeholders in assessing possible socio-economic and environmental impacts of new technology application for developing viable scenarios and actions to maximize positive impacts and minimize negative ones.<sup>25</sup>

(iv) *Building IR4.0 technology and related infrastructure, data security and e-government* that will help increase efficiencies of government and Vietnamese firms as well as foster the faster adoption, adaptation and application of IR4.0 technologies. It will also enable Viet Nam to better utilize domestic data resources for growth. Expansion of e-payments (starting from government payments and e-banking) and e-commerce platforms will help Vietnamese firms

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<sup>25</sup> See for example: (i) Hennen, L.; Nierling, L. (2015): A Next Wave of Technology Assessment? Barriers and Opportunities for Establishing TA in Seven European Countries. In: *Science and Public Policy* 42 (1), pp. 44–58; (ii) IAIA (forthcoming): *FasTips on Impact Assessment and Sustainable Development Goals*. International Association for Impact Assessment. Fargo, USA; (iii) Ladikas, M., Chaturvedi, S., Zhao, Y. & Stemerding, D. (2015, Eds) *Science and Technology Governance and Ethics; A Global Perspective from Europe, India and China*. Heidelberg: Springer; (iv) Liebert, W.; Schmidt, J.C. (2010): *Towards a Prospective Technology Assessment. Challenges and Requirements for Technology Assessment in the Age of Technoscience*. In: *Poiesis & Praxis* 7 (1-2), pp. 99–116

connect in local value chains, increase their efficiencies and gain more added values. Development of e-payment and e-commerce platforms is often provided by the private sector, however to accelerate the scale growth requires innovative forms of collaboration between firms, research institutes and financial institutions with the government.<sup>26</sup>

- (v) *Incentivizing “Development finance sandboxes”* for experimenting with government seed-funding and innovative multi-stakeholder co-financing mechanisms. This would help crowd-in private sector investment to accelerate the development of IT infrastructure, data security, e-government, e-payment and e-commerce platforms as well as timely implementation of various important initiatives such as smart transportation, smart cities and open data systems. Besides continuing efforts to grow these mechanisms, the UNDP Development Finance Study<sup>27</sup> suggested actions for promoting private sector investment, effectively mobilizing and utilizing resources for public investment, ensuring public investment helps crowd-in private investment and attracts quality FDI. It may also be useful to explore ideas of ‘taxing robots’ or taxing large tech firms similar to those undertaken by some governments in other countries, or mapping other innovative solutions for increasing government revenue and use for redistribution/addressing the risk of increasing inequality in the IR4.0 era.

## CONCLUSION:

Over the last two years, the awareness of policy-makers and public at large in Viet Nam has increased substantially on the opportunities and challenges IR4.0 offers to the country’s development. Political commitments have been made and measures to prepare for IR4.0 are being developed. It is the right time to formulate and undertake concrete actions to seize the unique opportunity for crafting a transition to anticipatory, adaptable and agile governance to make IR4.0 inclusive and further build solid, deep-rooted foundations and Viet Nam’s approach to long-term economic development, for long-term prosperity, human development and environmental conditions for all Vietnamese. Whether the technological transformation will generate leaps in productivity, creating new growth drivers and good employment for all Vietnamese and leads to a resilient, prosperous and sustainable Viet Nam where ‘No One is Left Behind’ depends greatly on the mobilization of the tremendous potential and creativity of the GoV, business and people.

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<sup>26</sup> An example of the fast expansion of e-payment (using QR code) with innovative collaboration and regulatory experimentation in China can be found at: (i) <http://www.theasianbanker.com/updates-and-articles/qr-code-payment-system,-a-game-changer> and (ii) <https://technode.com/2018/12/19/wechat-central-bank-qr-tax-payments/>

<sup>27</sup> <http://www.vn.undp.org/content/vietnam/en/home/library/poverty/DFA.html>